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WILDLIFE IN NORTH CAROLINA

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Eager beagles await release from a wood dog box before a morning rabbit hunt. Houndsmen revel in listening to the chase as their dogs sound off in pursuit.
PHOTOGRAPH BY MELISSA McGAW/NCWRC.

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WILDLIFE IN NORTH CAROLINA

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Cover: Sunrise from a cliff of Hawksbill Mountain near Blowing Rock reveals wind-scoured rocks, frozen pools of water and the colorful geology of western North Carolina. PHOTOGRAPH BY SCOTT HOTALING.

Wildlife in North Carolina is the official educational publication of the North Carolina Wildlife Resources Commission. It is dedicated to the sound conservation of North Carolina's wildlife and other interrelated natural resources and also to the environment we share with them.

EDITOR'S NOTE

Gene Hester devoted his professional life to fish and wildlife research. Now, in retirement, he is helping others get an opportunity to do the same.

A former U.S. Fish and Wildlife Services leader and N.C. State professor, Hester recently announced that he and his wife, Katherine, have created an endowment to financially help students interested in getting real-world experience while attending N.C. State's College of Natural Resources. For Hester, it's all about getting your feet wet—figuratively and literally.

MELISSA McGAW / NCWRC

"I want to encourage people in the fisheries and wildlife profession," said Hester, who lives in Wendell. "I am impressed that students are interested enough in the profession that they are willing to get into debt to do it. I want to help them a little bit along the way. This will help them get their feet wet and determine if that is what they want to do."

If students need a dose of inspiration, they need to look no further than Hester. The same man who they see around campus and who chronicles his adventures with a barred owl he befriended and nicknamed Hootie, once shaped fish and wildlife policy during a 25-year career with the U.S. Department of Interior in Washington, D.C. Hester talks nonchalantly of his career, but there was nothing ordinary about his rise from head of a USFWS co-op unit on N.C. State's campus all the way to deputy director of the entire agency. He later served as associate director of national resources for the National Park Service and deputy director of the National Biological Service before retiring in 1996. His career was decorated with awards, including honors by Presidents Reagan and Clinton.

Even in retirement, Hester, 84, isn't one to sit still. I recently caught up with him in a canoe while he was fishing for minnows to feed Hootie. He remains active in nature conservation, not only working with N.C. State and a variety of organizations, but also by building dozens of bird boxes that hang in millponds around Wendell. He has been writing articles and taking pictures for *Wildlife in North Carolina* since 1955.

Hester wouldn't want it any other way. He chuckles and dismisses the notion of slowing down or joining other retirees for a life of leisure in Florida. "That's not me," he said. "I feel like I'm where I belong right here on this lake, doing what I want to do."

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A Voice From The Past

When the Voice of America ("The Prize," September/October 2016) began broadcasting, I was stationed in Beaufort County as a wildlife enforcement officer, with my work area including Pitt, Pamlico and Craven counties. I was very familiar with all three sites of the VOA. When first developed, construction allowed only for bulldozing over trees within the sites. Places for the towers were cleared of vegetation. As no other clearing occurred, the remainder grew up in an almost impenetrable mass of native plants and downed trees. This refuge was home to deer and other smaller animals and birds.

Trespassing was not allowed and a security force was employed and present. They had a huge spotlight mounted on top of the main building that could illuminate across the entire site. This discouraged night deer hunters, as they could not stand to feel the glare and heat from that spotlight. It was fenced in by barbed wire, so hunters had to remain outside. Deer dogs would infiltrate the jungle and occasionally chase a deer outside the fence.

The administrators of the sites were very friendly and cooperative with the N.C. Wildlife Resources Commission. From 1965 to 1967, John Chancellor (of NBC News fame) was director of the VOA program. He visited the sites often and particularly enjoyed seeing the deer on Site B. A picture hung in his office of him bottle feeding a "Bambi" that lived on the grounds.

About 80 people speaking about 80 different languages were on site and broadcasting all over the world, 24 hours per day. Site A was constructed exactly like Site B, but did not house a main broadcasting facility and administrative offices as did Site B. Both Site A and B grounds were somewhat moist most of the time, as no or very little drainage was initially installed.

Few people knew it, but due to the heavy vegetation and very damp condition of Site A, hundreds of woodcocks and Wilson's snipe frequented the site in the fall. At late evening, the air was filled with these birds going to roost. I never saw anyone hunting them, though it could have been like shooting wood ducks going to roost. Maybe they were not deemed worth a shell or maybe not a suitable table fare. I have often wondered if this remains today. Site C, being much smaller, did allow small game hunting, mostly rabbit and/or quail.

I am pleased to see that the Wildlife Commission ended up with this property. Though it has changed since I saw it last in 1969, it surely can provide adventures to others as it did to me. Thanks for the article.

John Kennedy
Captain, Retired
Enforcement Division

Love at First Sting

I loved Quent Lupton's debut article for *WINC* ("Meet the Often Misunderstood Red Velvet Wasp," July/August 2016). I've been a subscriber since 1964 (thanks to my grandad!) and yours was one of the finest debut articles.

It's true, I've always had an affinity for red velvet wasps, but that only made me eager to read your piece — not overrate it. I loved your use of "complicated" when describing life as a female wingless wasp. Well done. That really set the stage for the "lifecycle" bit.

Similar to Dr. Sorenson, I had a dramatic encounter with a red velvet wasp. I was working in the yard and what walks past but a red velvet wasp. My wife had never seen one. So I proceed to pick it up and show it to her and our young son, Aaron. I know that they sting like a hornet but I wasn't worried, as I had on thick leather work gloves. BAM! She stung me something fierce. Perhaps that's why they are nicknamed the "cow killer"— as they can sting through very thick leather.

Amy Friend's artwork was the perfect complement to your story. Many thanks!

Carlton Howard III
Raleigh

Feel The Buzz

Bee City USA would like to thank Helen Correll for her "Our Bee-utiful Native Bees" article in the July/August issue. She captured their diversity across species and the value they bring to sustaining ecosystems through pollination.

The European honey bee gets lots of attention because modern American agriculture practices rely on them as itinerant pollinators, rented and moved from blooming field to field. Most fields don't have year-round habitat nearby to sustain native pollinators.

Correll's article explained that the 4,000 bee species that are native to North America are generally more effective and efficient pollinators than honey bees. At Bee City USA, we encourage cities and counties to appreciate and welcome all types of pollinators through more intentional landscaping that is pollinator conscious. Even though three-quarters of the world's plant species are counting on them for reproduction, many pollinator species, not just honey bees, are declining around the world. Habitats rich in a diversity of native flowering plants and free to nearly free of pesticides are bees' best hope of surviving climate change, diseases and parasites. Each of us can help through our landscaping choices!

Phyllis Stiles
Founder/Director, Bee City USA
Asheville

write us

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The Rabbit PACK

FELLOWSHIP, MENTORING INSPIRE A GROUP OF LONGTIME HUNTERS TO STICK TOGETHER.

Few things in life make this group of veteran rabbit hunters happier than a cool morning and a pack of beagles. Listening to their dogs on the chase and bonding with fellow hunters is more important to the lifelong hunters than whether or not they bag a rabbit. It's an experience they all cherish, and one they believe in sharing with others.

Written by Jim Lasley // Photographed by Melissa McGaw

Previous page: Kenneth Everhart holds a rabbit harvested during an early morning hunt. Above: George and Howard Everhart release the hounds as they prepare for the day's hunt. Opposite: Kenneth Everhart listens for beagles while hunting a Sampson County thicket.

Howard Everhart, George Everhart and Jim Stone are the remaining founding members of a group of friends and family that began hunting together — and teaching newcomers how to do the same — more than three decades ago. Once filled with nearly a dozen members, the group is down to a handful of hunters. Founding member Terry Smith remained an active participant before passing away earlier this year.

Kenneth Everhart, 56, regularly joins his father Howard, 82, and cousin George, 62, on rabbit hunts. They have hardly slowed down after all these years together. "My dad is 82 and stomps briars down better than young guys," Kenneth Everhart said. "He loves rabbit hunting and I bet you he has never missed a season. I haven't either. We go three or four days a week, unless we've got a funeral or something."

The group of old friends is equally committed to sharing that passion with young and novice hunters. They regularly serve as mentors for anyone interested in learning about rabbit hunting, and they often bring along a beginner or two.

"Our main thing is hearing the dogs run and taking those who've never been before . . . It's amazing to see somebody who has never been before. They're thrilled to death and seeing that makes it worth the whole trip," Kenneth Everhart said.

Ansley Sharum, a 16-year-old sophomore at East Rowan High, is a young lady who has benefited from the adult rabbit hunters. "I sure do love it," she said. "I'm not awkward when I'm out there. They are good guys and really funny. They make me feel like I know what I'm doing. They make me feel like I'm good at what I do."

In fact, Sharum has come so far during her years hunting with the group of friends that she now serves as a mentor of sorts to a novice named Mike Sterling, a New Jersey man who knew little about hunting until he moved south several years ago. Sharum was by Sterling's side when he wounded a dove on his first hunt and did not know how to dispatch it. So she put the bird out of its misery. "I'll never forget the look on his face," she said of Sterling.

Tony Sharum, Ansley's dad who serves as a wildlife officer for the Commission, often hunts rabbits with the Everhart group. He introduced Sterling to hunting and brought him out with the group. "He went on the Commission's website to find about hunting in North Carolina. I answered his inquiry and we have been friends ever since," Tony Sharum said.

Sterling, a therapist, finds hunting and fishing a peaceful pastime. "I love to watch the animals," he said. "(Tony) took me under his wing, taught me, gave me recipes and showed me how to cook what we take."

Or as Tony Sharum said in jest: "We're trying to make a redneck out of him."

Building
A BOND TOGETHER

Kenneth Everhart is no stranger to the outdoors either. He grew up hunting with his father — the elder Everhart shoots a .410 single shot that is 100 years old; his son a 16-gauge double-barreled shotgun.

"I grew up with a Remington 1100. I don't need that weight now or three shots either," Kenneth Everhart said. "I've migrated past the killing stage. It wouldn't bother me if I never kill another rabbit. I just like to see others enjoy themselves."

He spent 30 years with the Wildlife Resources Commission in the enforcement division — starting as a field officer and rising to colonel, the highest rank in the division — before retiring in 2010. "I never complained one day about going to work. If I could have chosen any career, this is what I wanted. There was nothing else," he said.

Everhart lives east of Raleigh but grew up in Rowan County, two blocks from the train depot in Spencer. The group often hunts in his native county and nearby Davie. Friendship and fellowship are the bywords for the rabbit hunters. Jim Stone, 60, lives near Welcome and is the master of the beagle pack. He describes the group as "good friends [who] believe in the Lord. We just have a good time. No cussing or drinking. If one of them called me for help right now, I'd be there. I know they would do the same for me.

"Half the time when we hunt we take some boys and sometimes a girl. We get them out in the woods to see what rabbit hunting is all about and how you are supposed to conduct yourself as a grown-up. Those kids are better off outside with us than on the couch playing some video game."

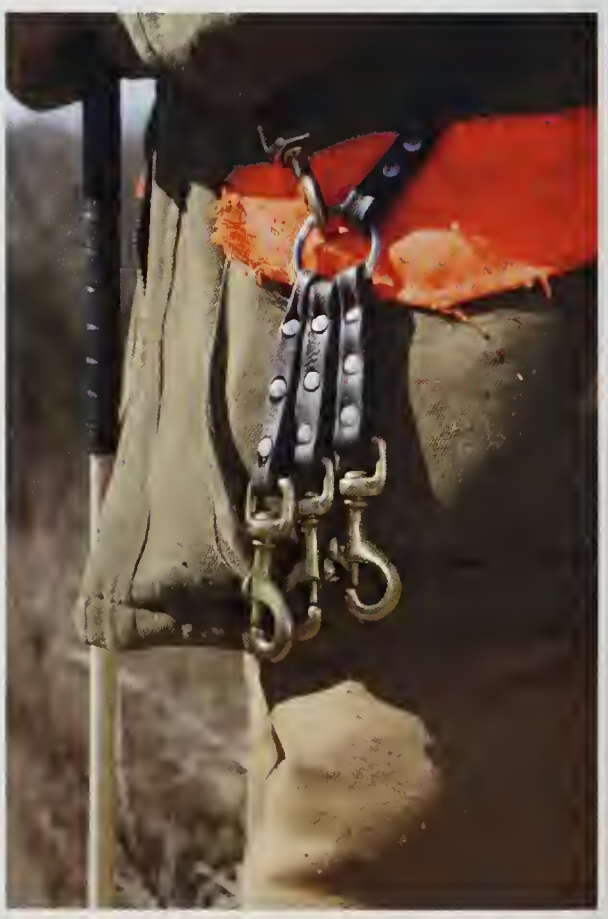
The group of friends hunts rabbits in Virginia, North Carolina and South Carolina. They hunt together twice a week during the season. "It's a year-round event," Stone said. "In the offseason we run the dogs once a week. There are 10 in the pack and we run five at a time."

"He keeps them tuned up so they don't just pile up in the pen and eat and get fat," Kenneth Everhart said. "He trades those dogs like a professional sports team. If they are not carrying their weight he replaces them. If one even acts like he's going to get on a deer, he gets rid of it."

The group also hunts squirrel, deer, turkey and dove. They fish the coast and farm ponds. But their passion is the rabbit.

"It's number one because it's such fun to spend time with the guys and my dad and you don't have to be still or quiet," Everhart said. "It's getting to be social and revolving around eating and watching the guys pick on each other. Listening to the dogs and enjoying folks is what rabbit hunting is all about. There's so many stories and things that happened over the years. If we're not hunting we're on the phone talking about it, property where we can go and run the dogs."

Left to right: George Everhart holds up the first cottontail of the morning. Ansley Sharum, a teenager who has joined the rabbit hunting club on hunts, proudly displays two rabbits while her father, Tony Sharum, looks on. Rabbit hunters use brass clips to hold multiple leashes when moving dogs to and from hunting grounds.



Terry Smith steps carefully through a cutover to follow the pack of beagles. Below: Howard Everhart, Terry Smith and George Everhart are three members of a rabbit hunting group that has stuck together for decades. "Listening to the dogs and enjoying people," fellow member Howard Everhart says, "is what rabbit hunting is all about."

Eat
WHAT YOU HARVEST

Howard Everhart and Stone have been close friends ever since their first hunt together. They are still at it after all these years, with neither willing to pass up an opportunity to take the group rabbit hunting.

Thanksgiving hunts are a tradition in the Everhart family. In fact, Kenneth Everhart said, they have come to replace the meal altogether ever since the hunters didn't return home until after dark one year.

"Mom was real mad," he recalled. "'It's all in the refrigerator,' she said. 'And you better eat it because it's the last Thanksgiving meal I'm going to cook.' She's still living and been true to her word all these years. Dad said the good thing about it was next year we wouldn't have to worry about getting home late."

The hunters harvest several rabbits a season. And what do they do with them?

"We eat 'em. That's what I had for supper last night," said Kenneth Everhart, who rattled off his standard recipe. "Par boil for 45 minutes and cook 'em like country-style steak. Dip 'em in egg and milk, roll them in flour and put them in the skillet long enough to form a brown crust. Then pour the gravy from the skillet over the rabbit and bake at 350 (degrees) for 30 or 40 minutes. Then serve 'em up with biscuits and mashed potatoes."

How has Kenneth seen rabbit hunting change over the years and what does he think the future holds? "There used to be a lot more briar thickets around a farm field. Then the push came to plant every acre and we lost a lot of rabbit habitat and real thick cover where they could hide from predators," he said. "At least the rabbit hasn't gone the way of the poor old quail, which you just can't find any more . . . Nowadays, there seems to be fewer rabbit hunters. A pack of dogs takes a lot of time and a lot of work. Maybe it's just fading away."

Stone acknowledges the loss of rabbit habitat but predicts a good future for the pastime. "The land is dwindling some," he said. "We have no problem now finding a place to hunt and I think it will be that way for my lifetime."

Jim Lasley is a freelance writer based out of Burlington. This is his first article for Wildlife in North Carolina.

VOICE OF THE OUTDOORS

North Carolina native son Eddie Nickens has combined a passion for the outdoors and writing into a dream career

WRITTEN BY MIKE ZLOTNICKI

Outdoors journalist T. Edward Nickens on assignment for *Garden & Gun* magazine on a south Georgia quail plantation.

ERICA HANWAY

In the world of outdoor writing, Raleigh's Eddie Nickens is pretty much an anomaly. While most of us one-trick ponies specialize in a given medium, Nickens is a versatile workhorse, equally as adept in front of a camera as behind a keyboard.

Better known as T. Edward Nickens to his readers, the freelancer extraordinaire has landed a spot as editor-at-large on the masthead of *Field & Stream* magazine, is a contributing editor for *Audubon* and has had frequent bylines in *Wildlife in North Carolina, Smithsonian, Garden & Gun, Men's Journal, Backpacker, National Geographic Adventure, Our State* and many others. Nickens has also hosted, co-produced and written for television and web-based series, including "Heroes of Conservation" and "Total Outdoorsman's Challenge." He has compiled and edited "The Total Outdoorsman Manual" and other how-to books.

The High Point native has gone from writing columns free-hand on yellow legal pads behind the counter at Sutton's Drug Store in Chapel Hill to living out the dreams of outdoorsmen and journalists alike. He has not only written about hunting and fishing while traveling to every corner of North Carolina, but he regularly chronicles his adventures from across the country while also covering environmental issues around the world.

Mike Zlotnicki, who has regularly crossed paths with Nickens over the years, sat down with the veteran scribe to discuss his career in the outdoors. Highlights of their conversation follow.

PHOTOS COURTESY OF T. EDWARD NICKENS

Top: Eddie Nickens at age 15 on his first overnight hunting and camping trip with his mentor Keith Gleason in Gates County for deer. Bottom: Nickens, left, provided the story behind this photo: "Opening weekend of dove season, circa 1986, with my pal Lee Davis, just outside Lexington, N.C. That camo truck was awesome. It was a 1973 three-on-the-tree Chevy, white. One day after duck hunting at Falls Lake, Lee and I were sitting on my porch and he said, 'We oughta paint your truck camo.' Three hours and a bunch of spray paint cans later, glory was revealed. Man, I miss that truck. Still have the boots."

Who got you started hunting and fishing?

A man named Keith Gleason. In last month's issue [of April '16 *Field & Stream*] there's a 5,000-word essay on how I started hunting and the man who took me hunting. Short story is my dad died when I was 13 in a plane crash near Pilot Mountain. Real sudden. I grew up in High Point always loving the outdoors. We had a big creek that went by the house and had about an 80-acre patch of woods behind the house, which is odd, because we lived inside the city limits. It was just a little piece of wild right out the back door.

So, when a lot of kids were going to track practice or football practice, I was going to the woods. We'd always grown up camping. My dad's favorite place was Linville Gorge. I've got all of his original maps from when he was backpacking before the word backpacking had been invented yet. But I always had that love of the outdoors.

A man at our church, a man who just recently got out of the military, Keith Gleason, knew my dad and respected my dad, sort of innately recognized a young fellow who needed a little something, who needed a mentor. So, he asked my mom one Sunday if he could take me squirrel hunting. From that next Saturday until I went off to college, where Keith went, I went…There's not many times you can put your finger on a pathway in life and say everything changed. Everything changed with Keith.

How old were you when you killed your first deer?

I never killed a deer with Keith. I killed my first deer after I started writing for *Wildlife in North Carolina* with (photographer) Ken Taylor down in Chatham County. I was in a tree, Ken was in a tree and a buddy of Ken's was in a tree and I shot a deer with a 7mm magnum. The deer weighed about 3 and a half pounds. I was mortified…MORTIFIED! Here I was with the photographer for *WINC* and I could practically stuff that thing in my game pouch. It was a one-handed drag.

When I went to college I fell into a crowd from Lexington, at UNC, and those guys were duck hunters, and I fell in love with duck hunting. This was right after Jordan Lake was cleared and dammed and it was a wilderness out there. All of the roads going into the lake, none of them had been closed. So we could leave school, drive down to Jordan Lake, ride around the lake bed, bass fish, duck hunt, camp. I ran a trap line one year in college with a buddy of mine.

What magazine did you first write for?

Well, I actually worked at Sutton's for two more years after graduating from college [after working there as a student]. I had two college

degrees and I worked at Sutton's Drug Store because it was just a fun place to be and I didn't really know what I wanted to do. I didn't want to move to a big city. I didn't want to work for a newspaper. So, I would write just for myself, and I wound up trading out the old NCNB [North Carolina National Bank] office—I was the janitor there—and they didn't pay me, but they gave me an office space. And so I would leave Sutton's and go up to my office and I had these big huge windows opened up over Franklin Street and I fancied myself the young Hemingway—the undiscovered Hemingway of Chapel Hill.

I knew I wanted to write about the outdoors, and I knew there was one guy who knew about that, and that was Jim Dean [former longtime editor of *WINC*]. Jim doesn't remember this story, but I remember it very clearly. I called Jim and I'm sure it was the phone call he never wanted to get; some kid wanting to come and talk to him about becoming a writer. And you know Jim, he was gracious enough. He said 'Come on up.' And this is no lie. We were sitting in his office, he was behind his desk and I was telling him what I wanted to do. By then I had volunteered for North Carolina Ducks Unlimited. I was editing their quarterly newsletter. I was editing the quarterly letter for the North Carolina Wildlife Federation. So, I was showing some gumption for this.

The phone rang while I was sitting right there. He took the phone call. I remember him having that phone to his ear and saying 'yes ma'am, yes ma'am, yes ma'am," and he reached over the desk, handed me the phone and said 'This call's for you.'

I don't remember the lady's name but she was the editor of the *Zebulon Record*, and they were asking if Jim knew of anyone who could write a hunting and fishing column. I was there the next morning at 9 a.m. I got the job. I was a writer. They paid me 50 cents a column inch [about 40 words]. I have [saved] every one of those columns. I did that about eight months, nine months and I went to the *Chapel Hill Newspaper* and asked them if they'd like to run it, and I walked out of there a syndicated columnist. I was high on the hog.

Your career has brought you to all sorts of remote areas around the globe, from scaling tree canopies in Honduras to paddling remote Ontario rivers that have put you in risky and precarious situations. What are some of the closest close calls?

The closest was definitely on the Aniak River. It was a first descent of a river in Alaska. Four of us from Raleigh put it together. Me, Scott Wood from the Provision Company, Bill Mulvey from the Provision Company and David Falkowski from the Provision Company. So we did that trip and that sort of put me on the map with *Field & Stream* that I could handle that kind of assignment and do that kind of writing…

So, we did this big river in Alaska. There'd been some rafting operation through there but nobody in a canoe because you had to fly in. So we ended up taking folding canoes in numerous trips in Piper Cubs landing on the tundra. We were told there would be no whitewater, and that turned out to be quite not the case. Turned out we had some pretty nasty stuff.

The photographer and I took a big spill in a big strainer [tree branches in the water] on a big bend that had cut through the tundra gravel bar and just flipped immediately in some really tough water wearing waders. Colby, the photographer, a big hockey player from the Midwest, he grabbed ahold of the boat but I went straight down. It was one of those times that was extremely sketchy…

I was caught in the bottom of the strainer and the river was flowing so fast that I was holding on to this branch. I was just held horizontally in the current like a flag in a stiff wind. I crawled hand over hand under water up that tree. As the canoe went over, the last thing I saw was looking upstream at my buddy Scott Wood running for all he was worth to get to me. So a scary time, and that's the rock I pulled off the sandbar we finally got out on [showing rock]. I had written 'No' on that rock, and that meant 'no, I'm never going to do another trip like that again.' That didn't last very long. I ended up doing plenty more backcountry canoe trips. But, big salmon. That was the pursuit.

When you are here in North Carolina and not on assignment, what do you like to do for outdoor recreation?

I deer hunt, and I duck hunt, and I squirrel hunt, quail hunt a little bit. But if I had my choice it'd be ducks. I love to deer hunt. I love to sit in the stand. I love to shoot a couple of deer with really long backs and get it over with. I'm not too big on antlers. I'm in the Boone and Backstrap Club. I really like sitting in a tree. I don't like sitting in a box blind. I love sitting in a climbing tree stand. But I do like to duck hunt. I'm pretty crazy about the ducks.

At picturesque Boulder Mountain, Utah, Nickens is hard at work on a digital feature story about fly-fishing for the legendary tiger trout. The tiger trout is a sterile hybrid of the brown trout and brook trout. The name "tiger" comes from the vermiculated pattern on the fish that resembles tiger stripes.

The outdoors has become a tradition for the Nickens family. Eddie and his son Jack pose for a photo on Jack's first waterfowl hunt at a Johnston County swamp. Jack holds a shotgun featured in a *Field & Stream* article written by his father that tells the story of how the firearm had been handed down to four generations of young hunters.

What places in North Carolina talk to you? You have a place in Morehead City. You do the coastal thing?

I do the coastal thing. But I love the swamp more than anything. I like walking in a swamp. I like sitting in a swamp. I love to paddle canoes, whether it's fast moving water or slow moving water, or not much water at all and I have to haul the canoe over trees and logs and beaver dams. I just love to be in a canoe. I'm in a club, Stillwater Hunt Club near Enfield, that's got some gorgeous pieces of bottomland woods on it.

From here in Raleigh, you go east and it's all pretty flat. I grew up being able to see through woods and be able to look to the next ridge line. I miss that. The swamp does give me that same sort of primeval feel. I like to fish out at Cape Lookout. I like to hunt beaver ponds, to sit in bottomland hardwood forests. Just over the last three years I've kind of rekindled an old love of trout fishing in the mountains with my son, Jack.

So much of what you write about is not only the "what" and "where," but the "who." Who are the one or two people you've met over the years that stick out in your mind or impacted your life aside from Gleason?

It is true that I tend to gravitate to telling other people's stories. You know, with the hunting and fishing writing, for a really long time, I didn't want to write about hunting and fishing. My first eight or nine years of freelancing my bigger clients were *Smithsonian, National Geographic Adventure and Men's Journal*. I've written so much for *Wildlife in North Carolina*, I didn't want to write anymore about hunting and fishing. I didn't want to make my hobby my job.

I've approached my writing about hunting and fishing from a real storyteller's perspective. So really, I think my best stories are just very good stories that happen to be told through the medium of hunting and fishing.

We've recently written about pocket knives and other equipment. What are one or two things you are sure to have on you when out on assignment?

I am a pretty big fan of a fine folding knife. Maybe I can tell you about my favorite rifle and why I like it. I shoot a Kimber .308, the older, underappreciated, deadly .308. I like to hunt out of trees and I am a super conservative rifleman. I've shot groundhogs at 300 yards and I've shot elk targets at 1,000. But I've never shot at a deer at 200. I don't like taking those long shots on big game. I did a lot of research and I chose that Kimber. It's a short action bolt and it's completely designed around that .308 cartridge…

What's on top of it?

Just about all of my rifles are capped off with a Bushnell Elite scope. You can waste a lot more money. That reminds me of my other piece of essential equipment. Unless I'm quail hunting, I have a pair of binoculars around my neck. Deer hunting, duck hunting, goose hunting. Right now I carry Maven, which is a fabulous binocular. It's like the Bushnell Elite. You can spend more, and you can waste a lot more. They're not cheap, but they're really, really good.

What's your go-to shotgun for ducks?

I shoot an old Benelli MSuper 90. It's flawless. It's mine. I don't like 3.5-inch shells, so I have a 3-inch receiver on it. I do like shooting an over-and-under. I've got a Beretta Silver Pigeon 20 gauge that I like to shoot. I think I might buy a nice, cheap 12 gauge over-and-under this year to take for ducks.

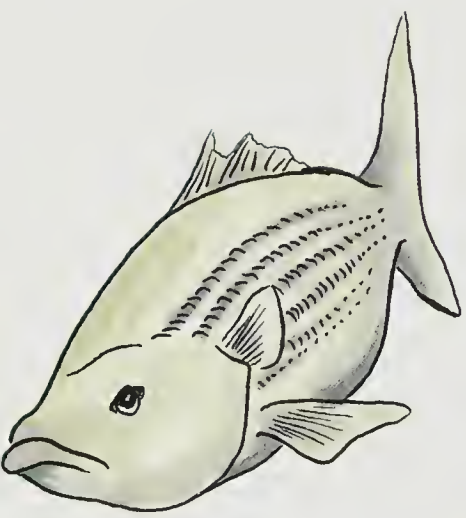
And now for the real fun and games: What to tell young aspiring writers about this outdoor writing business?

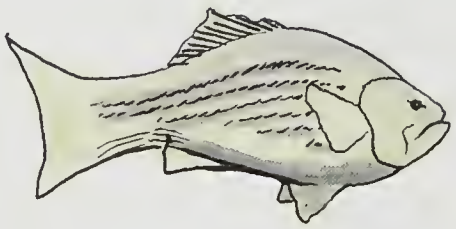
I'll be blunt—my best advice to young writers who want to make a living is to learn to shoot video. Note that qualifier: 'make a living.' Assuming you are talented enough, it's entirely possible to write a bit on the side, pick up some bylines and assignments, and make a bit of spending money writing. All predicated on a certain level of talent. But to make a full-time living purely as a freelance writer—raise a family, buy a truck, put kids through college—was never easy and it is now exceedingly problematic.

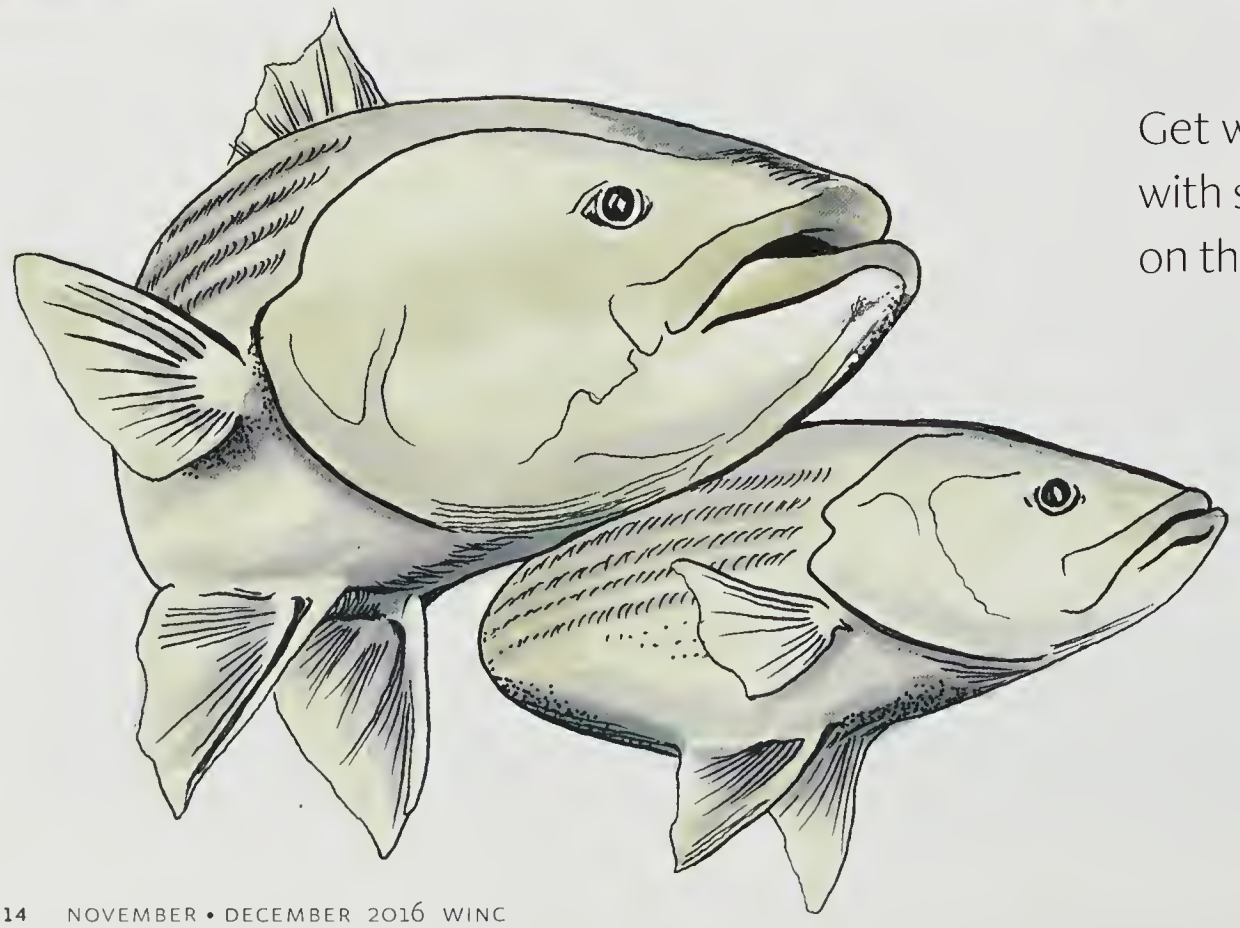
The bulk of my income comes from putting words on paper, but a significant chunk comes from video work, script-writing, non-magazine publishing, a real mix. But for those young people who want to compete in this industry, while writing will always be a part of the communications business, the ability to shoot and edit compelling web-based video will be critical. ◆

Mike Zlotnicki is the associate editor for Wildlife in North Carolina.

a Winter gathering







Get warmed up for striper season with some cold-weather fly-fishing on the Roanoke.

Written by Dusty Wilson

Illustrated by Amy Friend

The winter morning carried with it a slight bite, one that might have turned back a less hardy angler. However, some anglers find it refreshing, awakening, even alluring, because of the possibilities ahead.

The road has a way of rising to meet those who know something that others do not. While visibly peering into the murky waters of the Roanoke River is not possible, history has a way of repeating itself—in terms of striped bass anyway. Experienced fishermen can tell when the conditions are right. They know when to leave behind the spinning tackle and to grab a handful of fly rods and go deep-water fly-fishing for stripers. This is one of those moments.

NATURE'S WAYS Why Does Water Temperature Affect Fish So Much? See Nature's Ways, page 43.

Striped bass, or rockfish, have been rocking the boats of recreational fishermen on the Roanoke River for decades. Although the annual spawning run that culminates near Weldon often peaks between April and May (and the fishing is strictly catch-and-release until March), the party starts much earlier. Stripers from the North Carolina coast flood the western reaches of the Albemarle Sound and the mouth of the Roanoke in late December and January. Like long lost friends bouncing into town for a rockfish reunion, they gather in the first staging area before moving up river.

So what gives? Why get so excited about a January fishing trip? Why drag yourself away from a cozy fire to brave the elements and challenge Mother Nature?

"It's a lot of fish in a little area, that's the magic of it," Capt. Mitchell Blake said of the stampede of stripers that funnel into the river. Blake, owner and operator of FishIBX charters and our teacher for the day, has essentially cut his teeth on this fishery. He has since honed his skills to a razor's edge over the last 25 years. "When the water cools down, the bait in the sound will start moving west, looking for deeper water that will remain a stable temperature. The stripers will come with that bait source."

The Albemarle Sound is relatively shallow when compared to the river mouth, which can range anywhere from 20 to 30 feet deep. This added depth provides a change in water temperature and serves as a staging area for baitfish—and then stripers.

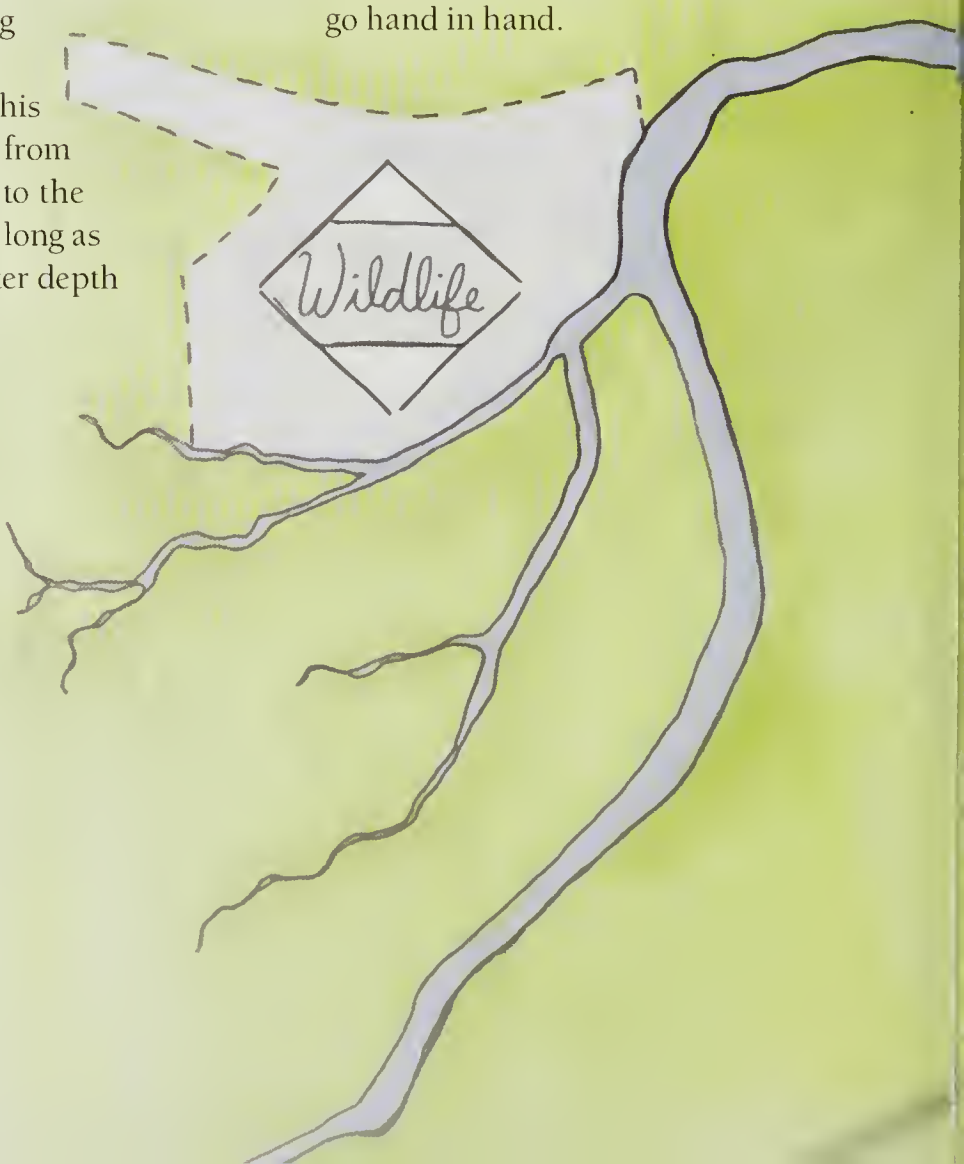
"We start to see stripers move into the rivers when the water dips into the low 50s," Blake said. "But, when the water gets between 48 and 42 degrees, that's when you get the mass of fish. This is definitely a water-temperature driven fishery."

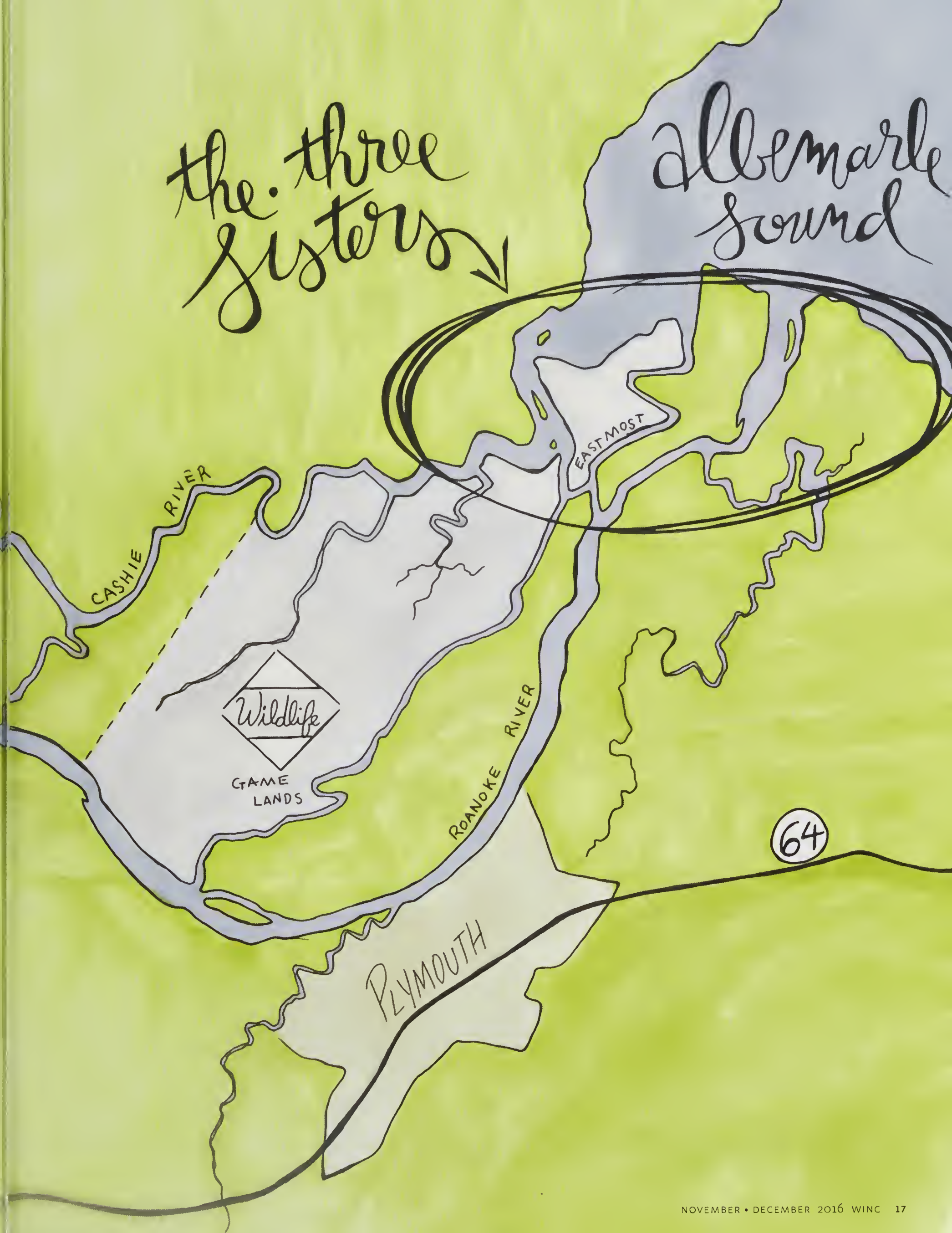
The rivers Blake refers to—the Roanoke, Eastmost and Cashie—share a unique bond. They run nearly parallel to one another before spilling into the westernmost reach of the sound, within the same mile of real estate. In Plymouth, the twisting entanglement known as the "Three Sisters" actually connects about 2 miles west of the sound at the Highway 45 bridge. Here anglers can navigate from river to river through a series of channels along the pilings.

While providing excellent habitat for striped bass, the confluence can be difficult for newcomers to navigate. However, thanks to the modern convenience of GPS, anglers can appreciate the ancient beauty of the black rivers, back swamps and cypress knees with little worry about getting lost. Stripers may be found anywhere in this combined estuary, from the broad spans to the bottlenecks, as long as sufficient water depth is present.

COLD WATER & Clouser Minnows

Although striped bass are commonly associated with many cold-weather fisheries, those fisheries are not as often associated with fly-fishing. However, in this unique setting, anglers handy with the long rod may actually have an advantage over their conventional counterparts. Due to the nature of coldwater fish and the fly itself, the two go hand in hand.




the three sisters
albemarle sound
EASTMOST
CASHIE RIVER
Wildlife
GAME LANDS
ROANOKE RIVER
64
PLYMOUTH

Unlike in the spring, when warm water encourages aggressive top-water takes and active presentations, winter fishing requires finesse and patience. Slower presentations often prove more effective, a challenge for most artificial lures that must be retrieved at a relatively quick speed to remain in the strike zone.

Consider this: A soft plastic swimbait, whether carried by a jighead or weighted hook, must always be moving or risk sinking below the fish and out of the strike zone. Likewise, a hard-bait, such as a diving crankbait, must be retrieved fast enough to create the downward force necessary to reach the fish. Certainly these baits have caught loads of stripers, but the problem remains: how to slow down and stay in the strike zone?

If you've seen a feather floating in midair, then you have a pretty good idea of how a streamer moves underwater. Practically weightless, a properly presented fly is an incredibly accurate representation of a baitfish made from natural materials.

"When you get that fly down to the fish, you can make it stay there. It's almost like you can balance it," Blake said. "With a jig, it's there and then it's out."

So, for a moment, the solution becomes the problem. How do you make a weightless bait sink?

Typically, a floating line is used when flyfishing in relatively shallow waters because it rides above obstructions, whereas an 8- to 9-foot monofilament leader or tippet sinks beneath the surface. This won't work for winter stripers that are in schools 14 to 20 feet deep. For plumbing the depths, you must enter the world of sinking lines.

Most fly lines are engineered with a braided nylon or Dacron core and a plastic coating. The core gives the line strength, while the coating determines whether the line floats or sinks — and how fast it will do so. Floating lines integrate microscopic glass spheres that give them buoyancy. Sinking lines have a dense coating of plastic that make them descend. The more dense and heavier the coating, the faster the line will submerge.

"I use anything from 250 grain to 400 grain," said Blake, noting that the sink rate of fly lines is designated either by grains (which is an actual weight measurement) or by the inches per second that the line sinks (also known as IPS). "A 250-grain line would be about 5 inches per second and a 400-grain line would be a 7 IPS."

"This time of year, the rivers have flow, and a heavier line will obviously get down faster," Blake said. "If I have a patient angler, we'll use 250 [IPS] all day. But, if the angler wants to fish faster and can handle a heavier line, I'll bump it up." Blake also uses a full sinking line, as opposed to a sinking tip, to ensure that his offering reaches the target.

Blake uses a leader and tippet that stretch no farther than 4 feet in order to keep the fly with the fly line. This helps to gauge where his offering is in the water column. "I want the line to pull the fly down, and know that the fly is there, not 3 or 4 feet above the fish," he said.

He usually uses a 20-pound piece of monofilament leader bound to a short shot of 10- to 15-pound tippet, creating a bullwhip-like effect that rolls the fly when casting.

Traditionally speaking, flies have been fabricated to resemble or match insects. However, striped bass do not feed on insects at this stage of their life. They're in full pursuit of large schools of baitfish seeking shelter from winter weather.

Streamers, the Clouser minnow in particular, resemble baitfish. They are also Blake's personal choice. "I love a heavy Clouser with big eyes," he said.

The Clouser minnow was a revolution in streamer fishing because of its innovative weighting system. Designed by Bob Clouser, the pattern uses a barbell shaped weight, tied to the backside of the hook shank near the eye, to force the point of the hook to ride up in the water, resulting in fewer snags from below. While it may seem counterintuitive to weight a fly after praising its

weightlessness, the amount of material in a large fly adds a degree of buoyancy.

"I typieally use 3- to 4-inch flies, whieh is a mueh larger profile than most people would think about in a Clouser," Blake said. "But there's not a lot of small bait around; they're not eating fry. I also like the Half and Halfs (a eombination of the original Clouser minnow and Lefty Kreh's Lefty's deeeiver) with feathers, beeause it adds a little more bulk."

"I really think eolor is seeond to the profile," Blake said, "but I will use a lot of loud colors that time of year, a lot of chartreuse and pink. I also like to mateh shad patterns."

Prior to the spawning run of the hickory and Ameriean shad, striped bass feed heavily on gizzard shad, whieh is a bit more fragile and suitable for dining. "That time of year gizzard shad will have a lot of blues, purples, and some pinks in them."

A FISHERMAN'S Touch

A speeial toueh is required to produee stripers in this environment. The real challenge begins once Blake eounts his fly down to the appropriate depth. "I use a quick strip, but not a long strip," he said. "I want to move the fly only 6 or 7 inehes. I just want to dangle it in [a fish's] eyes, wiggling and fluttering."

This teehnique imitates a gizzard shad struggling to acclimate to increasingly eold temperatures. "The patterns I'm using this time of year represent bait that's on its deathbed, moving really, really slow. I'm not stripping fast enough to bring it up in the water eolumn. It's crucial that the fly stays at that water depth.

"If there's a lot of eurrent, I'll quarter the east upstream and let the fly swing through the intended area as it gets down with the current. Or I'll make a drift with the wind so I'm not pulling the fly away from the depth I'm trying to target."

Along with taekle and teehnique, Blake notes that finding fish also requires a refined approaeh. "Good eleetronics are a major key for this fishery," he said. "I fish the contour lines, which will put me fishing ledges, with the fish hanging close to the bait."

Blake finds stripers and bait with traditional sonar as well as side imaging sonar, which can spot sehools over 100 feet away from eaeh side of the boat. Mapping software provides a bird's eye view of the underwater terrain, with ledges exposed and the contour lines to follow.

From December through February, stripers usually are 13 to 20 feet below the surfaee, with between 14 and 16 feet the sweet spot for eatching them, Blake said. A warming trend can push fish to their shallower range, while several days of cold suppresses them to the deeper end. He uses this information to select the fly line and fly size needed to reach the fish, typically juggling between 6- to 8-weight rods.

"They're in larger sehools, not three or four fish," Blake said. "It's more like 30 or 40 fish. When the fly gets down there, he looks at his buddy, then he looks at his other buddy, and says I'm going to eat that before he does."

The water rarely gets too eold for angling aetivity. "A lot of people will say that at 39 degrees or below, the fish beeome lethargic and won't bite. I can disprove this eoming and going. They might get a little lock-jaw at times, but I've caught them all the way down to the mid 30s."

In faet, the abundanee of traffie from fishermen and duek hunters will keep the channels open even when the edges freeze over. However, in times of severe eold, sportsmen must ensure that the launching ramp is not frozen before backing their boat into the water.

"What I love about fly-fishing this time of year is that you get ample opportunities to present the fly to the fish," Blake said. "Onee you find them and get the technique down, you get shot after shot after shot. Stripers are engineered to stiek with the bait fish until the spawning run, and the bait's not going anywhere, so they aren't either."

Blake regularly slides 70 or more stripers over his gunwales on half-day trips, with the possibility of 100 being a serious threat. Although stripers eaught within the rivers are eatch-and-release only until the season opens in Mareh, anglers will find ample warmth, and a fine reason to leave the fire, in the ritual of easting and eatehing striped bass on fly.

"I really think color is second to the profile," Blake said, "but I will use a lot of loud colors that time of year, a lot of chartreuse and pink."

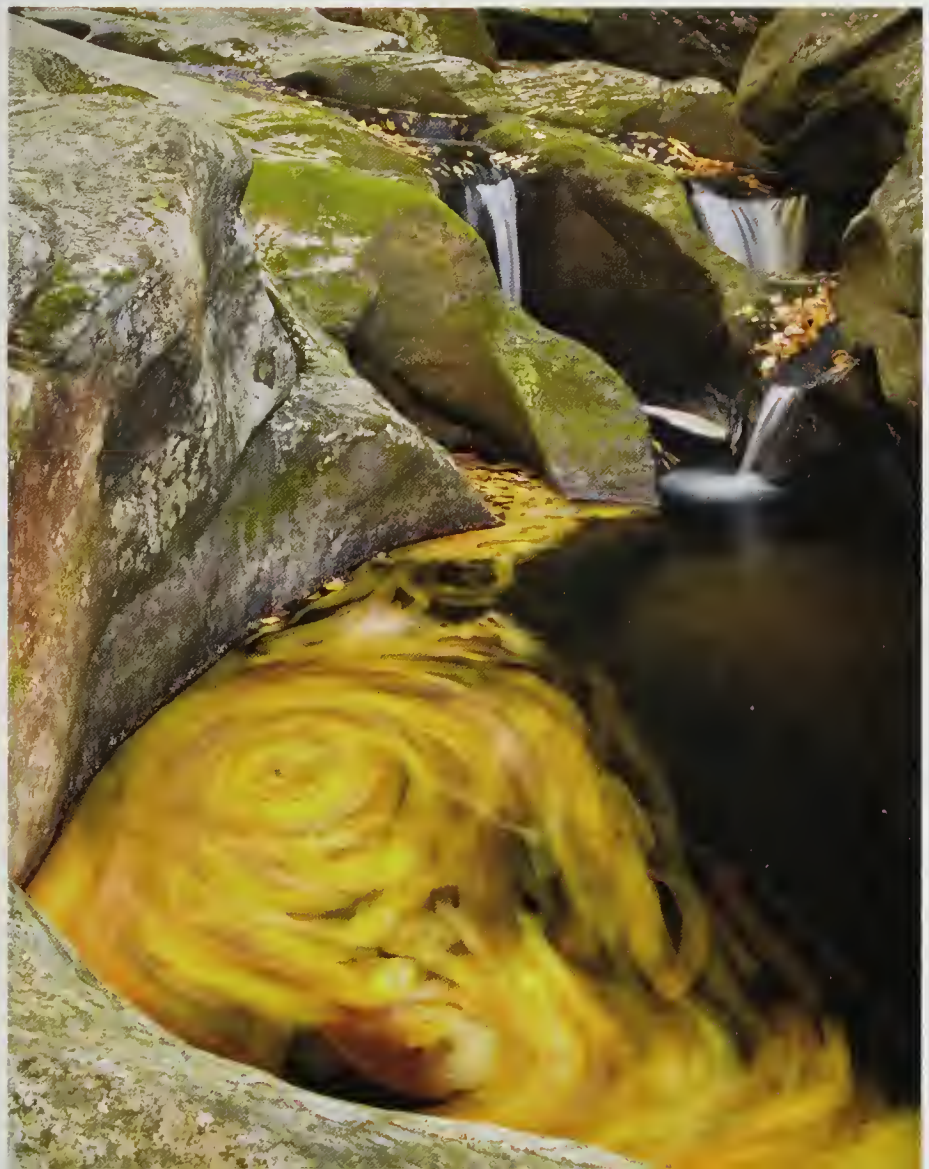
Dusty Wilson is a freelance writer, and experienced fisherman, based in Angier. This is his second article for Wildlife in North Carolina.

THE VIEW FROM Above

FALL COLORS AND SNOW CAPPED PEAKS ARE JUST TWO
OF THE MANY REASONS TO MAKE A TRIP TO THE MOUNTAINS
OF WESTERN NORTH CAROLINA

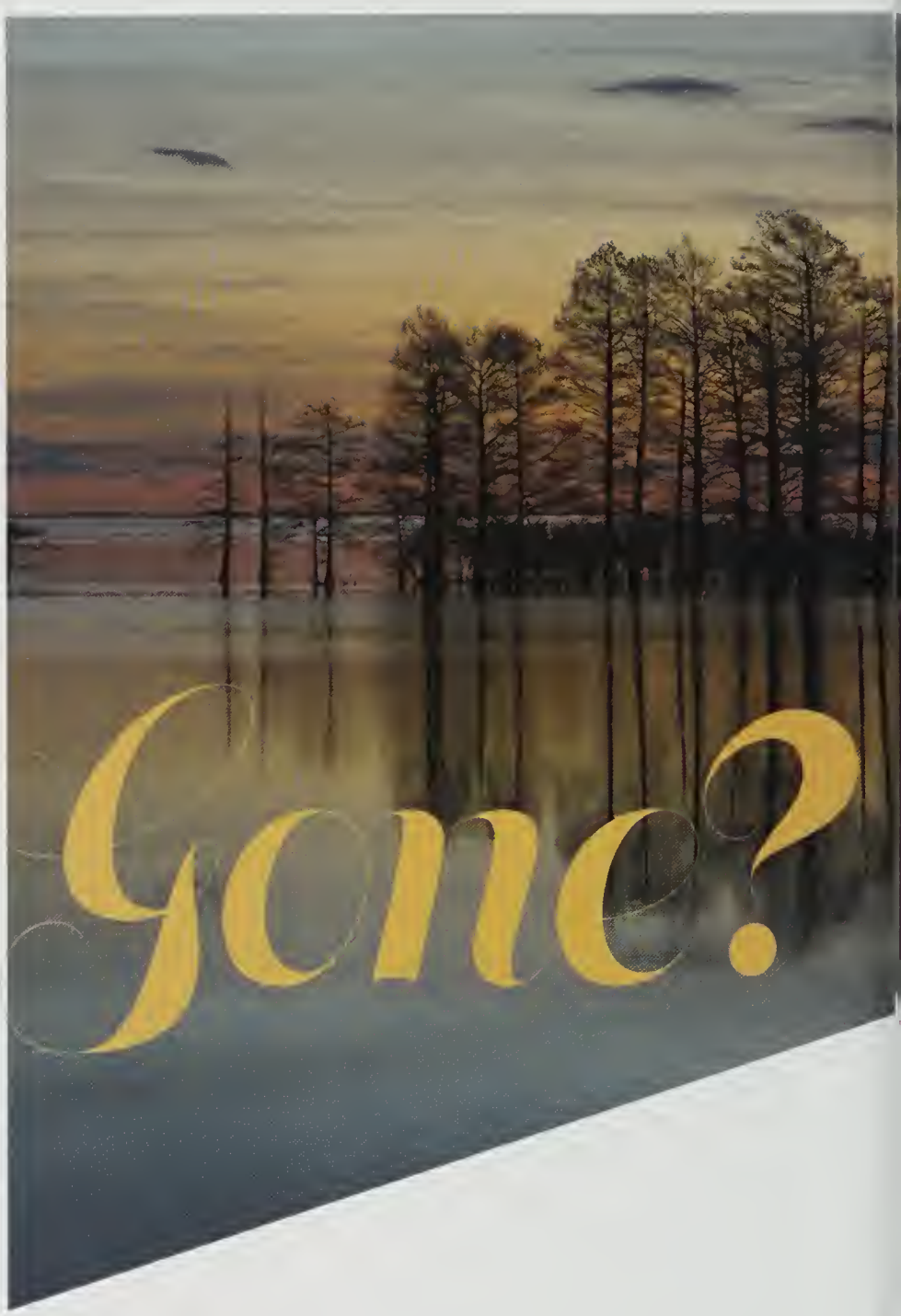
PHOTOGRAPHED
BY
SCOTT HOFALING

Above: Autumn collides with winter when an early season snow mixes peak fall colors with fresh snow near Great Smoky Mountains National Park. Opposite: Morning breath from a bull elk hangs in the air after bugling in the Cataloochee Valley of Great Smoky Mountains National Park. Bottom left: Leaves swirl in a cascade in a small stream in western North Carolina. Bottom right: Evening light shows off the beautiful colors of the Cullasaja Gorge between Highlands and Franklin. The area is known for its waterfalls, particularly along a 61-mile stretch of road that parallels the Cullasaja River through the Nantahala Forest.



Above: One can seemingly breathe in the crisp, morning air as the sun rises over Max Patch mountain in the distance. Max Patch, a bald mountain along the North Carolina-Tennessee border, is known for its 360-degree views of surrounding mountains. Opposite top: Frozen trees give way to a blue sky in the Smokies. Opposite bottom: Clingman's Dome, the tallest peak in Great Smoky Mountains National Park at 6,643 feet, offers a bird's-eye view of fog rising on this early fall morning.

Where has the Grass Gone?



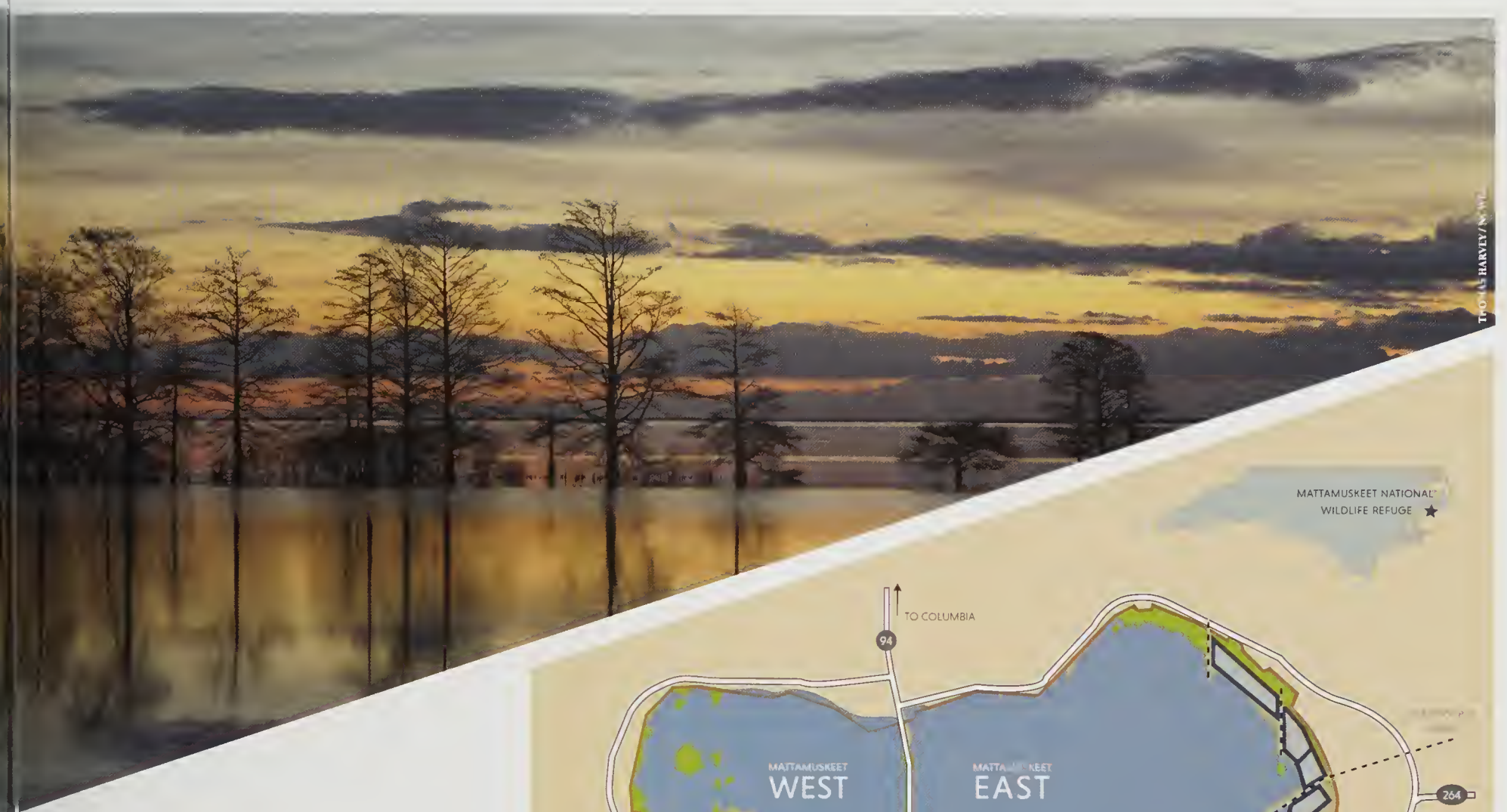
FACTORS IMPACTING SUBMERGED AQUATIC VEGETATION BRING TOGETHER PARTNERS AT MATTAMUSKEET NATIONAL WILDLIFE REFUGE

Written by
Doug Howell &
Michelle Moorman

THE GRASS HAS ALL BUT DISAPPEARED FROM LAKE MATTAMUSKEET, THE CENTERPIECE OF THE U.S. FISH AND WILDLIFE SERVICE'S (USFWS) MATTAMUSKEET NATIONAL WILDLIFE REFUGE (REFUGE). THE "GRASS," OFTEN REFERRED TO AS SUBMERGED AQUATIC VEGETATION (SAV), INCLUDES BEDS OF AQUATIC PLANTS LIKE WILD CELERY, REDHEAD GRASS, SAGO PONDWEED, SOUTHERN NAIAD, EURASIAN MILFOIL, MUSKGRASS AND NITELLA.

Located on the Albemarle-Pamlico Peninsula in eastern North Carolina, the Refuge was established to promote and maintain wetlands for migratory bird populations, specifically wintering waterfowl, as well as habitat for other wetland-dependent wildlife. Many of the Refuge wildlife and habitat conservation goals, outlined in its Comprehensive Conservation Plan, are supported by having grasses in the lake, as well as emergent vegetation around the lake shore. This vegetation provides key food resources for migratory birds, particularly waterfowl, as well as habitat for fish, crabs and other aquatic organisms.

Just how important is Lake Mattamuskeet and the Refuge to wintering waterfowl? Its strategic location along the Atlantic Flyway makes it a vitally important annual stopover site for hundreds of thousands of wintering ducks, geese and swans. Sportsmen and wildlife viewers alike, from all parts of the state and country, visit the Refuge and local area each year to hunt, fish, crab and observe



wildlife — activities that provide a vital economy to the region.

Why is the grass disappearing? The sudden decline of SAV on the east side of the lake, and the potential impact these declines could have, particularly to waterfowl, fish, and crabs, has alarmed natural resource managers from the USFWS and the North Carolina Wildlife Resources Commission (NCWRC).

"In 2014, a memorandum of understanding was signed by the USFWS and NCWRC to create the Mattamuskeet Collaboration Team for the purpose of co-managing more than a dozen projects aimed at addressing the health of Lake Mattamuskeet's ecosystem, identifying and prioritizing monitoring and research needs and opportunities for habitat restoration, as well as projects designed to increase the recreational value of the lake," said USFWS Southeast Region Director Cindy Dohner.

Since establishing the collaborative agreement, USFWS, NCWRC and other partner agencies and researchers have been studying the ecology of Lake Mattamuskeet in order to better understand why SAV has declined.

"This collaborative agreement has allowed the two agencies to leverage more resources and accomplish much more than they could if they were addressing this difficult conservation challenge of restoring Lake Mattamuskeet alone," NCWRC Executive Director Gordon Myers said.

As part of the Mattamuskeet Collaboration Team, the Mattamuskeet Technical Working Group was formed and tasked with ensuring that the best available science is used for habitat restoration on the lake and surrounding watershed. The Mattamuskeet Technical Working Group is a multi-disciplinary team consisting of members from USFWS and NCWRC who have specific and extensive expertise in wildlife and fisheries management, water quality and environmental contaminants.

Based on results from an assessment of water-quality trends, we have concluded that significant increases in nutrients and suspended sediments in the lake since the 1980s have caused an increase in harmful phytoplankton and a reduction in water clarity (eutrophication). As a result, the grass has declined from the deepest to the shallowest areas of the lake. Many of the last beds of SAV are currently located in the calmer waters along the shallow, southern shores of Lake Mattamuskeet.

FIGHTING PHYTOPLANKTON

Lake Mattamuskeet is the largest naturally formed lake in North Carolina, with a surface area of approximately 40,000 acres. It is also very shallow, with an average depth of just 2 feet. It is not the only shallow lake that has lost its grasses; other large, shallow lakes share similar histories. In theory, shallow lakes generally have two ecosystem states — one where phytoplankton is dominant or one where macrophytes dominate.

Phytoplankton are mostly microscopic, single-celled photosynthetic organisms that live suspended in the water, and include algae, diatoms and cyanobacteria. Macrophytes are aquatic plants (that include SAV) and grow in or near water and are either emergent, submerged or floating. Phytoplankton and macrophytes are considered primary producers because they use the process of photosynthesis to produce their own food while serving as food sources for animals further up the food chain.

Whether a lake is dominated by phytoplankton or SAV is important to resource managers because of the negative impacts that can occur. Dense communities of phytoplankton often result when there is too much sediment and too many nutrients like nitrogen and phosphorous in a water body. The combination of excess sediment and phytoplankton reduces water clarity, which reduces the amount of light in the water column available to SAV for photosynthesis. This causes the health and abundance of SAV to decline until the grass eventually disappears.

Once the grass is gone, lake water quality continues to decline because the grasses are no longer there to anchor sediments to the bottom with their roots and to absorb the excess nutrients in the water and sediment. Dense beds of SAV are desired at Lake Mattamuskeet because grasses maintain relatively clear water, can support fish and crab populations, and are attractive to waterfowl — many of which prefer to feed on aquatic vegetation or the aquatic invertebrates which live there. By contrast, a phytoplankton-dominated lake is not a preferred state because harmful algal blooms can occur and have adverse effects on fish and crab populations. This can also produce toxic cyanobacteria.

A HISTORY OF CHANGES

This isn't the first time in the history of the Refuge that SAV hasn't been present in Lake Mattamuskeet. The lake was refilled and established as Mattamuskeet National Wildlife Refuge in 1934 following a failed agricultural project that drained the lake three times in the early 1900s. At this time, no SAV was present and the lake had poor water clarity. Turbid water conditions prevailed in the lake until the 1950s, attributed to the large number of carp present, which tend to stir up bottom sediments.

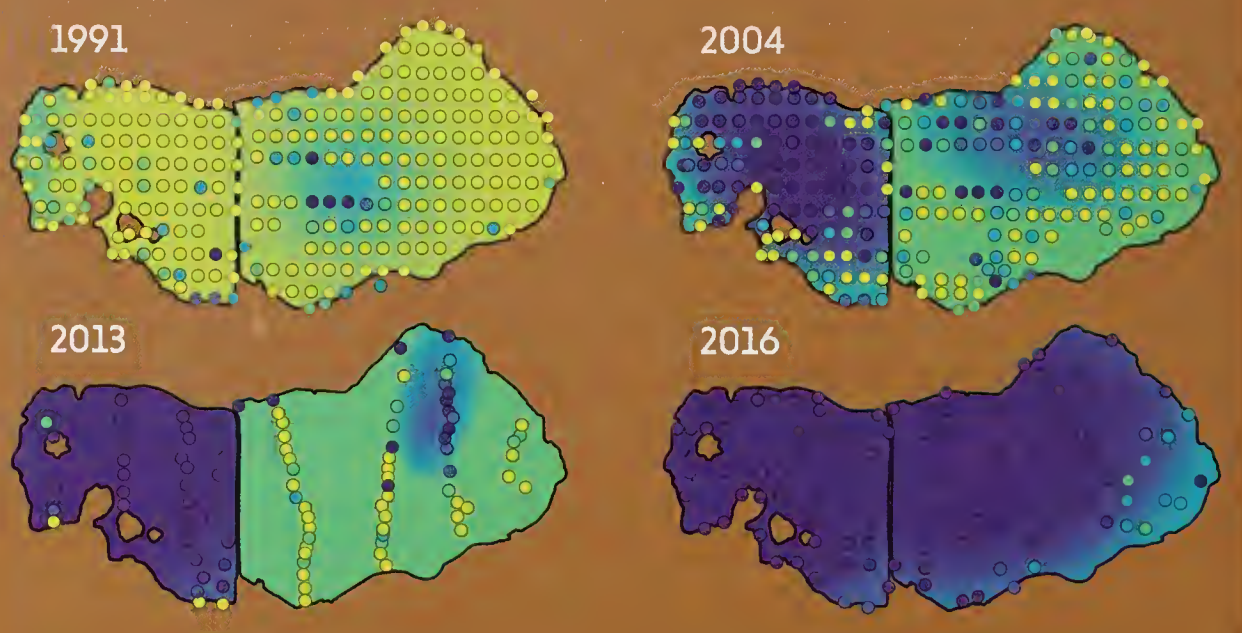
It was presumed that the turbid water conditions prevented growth and survival of SAV. Refuge managers began transplanting SAV and removing carp at this time. Between 1945 and 1960, SAV restoration in Lake Mattamuskeet began to have success with the removal of 2.3 million pounds of carp, 250,000 pounds of catfish and 150,000 pounds of gar, bowfin, gizzard shad and mullet. As SAV began to take hold, water quality continued to improve, which further promoted the establishment, spread and survival of the grasses during this time. Since the 1960s, the lake grasses have been viewed as an important part of the Lake Mattamuskeet ecosystem.

The grass on the west side of Lake Mattamuskeet began to decline during the 1990s, while grass on the east side continued to flourish. In 2009, concerns over those declines sparked research to more fully understand the apparent changes that were occurring. By extracting and examining cores of the lake sediment, researchers concluded that the construction of the Highway 94 causeway in 1940 resulted in a unique shallow lake ecosystem at Lake Mattamuskeet. Highway 94, which bisects the lake from north to south, effectively resulted in two distinct basins, which were only connected by five culverts underneath the causeway. The west basin of the lake was dominated by phytoplankton while the east basin of the lake had better water quality and supported dense beds of grasses. This unique two-state system maintained itself until recently, when the state of the lake changed again.

Monitoring data collected since 2012 indicates that there is presently no difference in water quality between the east and west sides of the lake, and rapid declines in SAV have occurred since 2013. Additionally, increasing levels of harmful cyanobacteria in the lake are producing toxins that could potentially harm wildlife and recreational users if the concentration of toxins in the lake increases. An assessment of water-quality data by the N.C. Division of Water Resources has determined that Lake Mattamuskeet is currently not meeting state water-quality standards, and beginning in 2016, the lake will appear on the U.S. Environmental Protection Agency's list of impaired waters.

GROWING CONCERN

MAPS BELOW SHOW THE ESTIMATED PROPORTION OF SUBMERGED AQUATIC VEGETATION (SAV) COVERAGE IN LAKE MATTAMUSKEET FOR THE YEARS 1991, 2004, 2013 AND 2016. SAV BEGAN TO DIE OFF ON THE WEST SIDE OF THE LAKE BETWEEN 1991 AND 1993 AND HAS BEEN RELATIVELY ABSENT FROM THAT AREA SINCE 1997. IN 2014, SIGNIFICANT DIE-OFFS OF SAV BEGAN ON THE EAST SIDE OF THE LAKE. *(CIRCLES REPRESENT SAMPLING LOCATIONS WHERE COVERAGE OF SAV WAS ESTIMATED.)*



WORKING ON A SOLUTION

There are likely many sources of inereased sediment and nutrients that have resulted in eutrophication in Lake Mattamuskeet, ineluding runoff from the surrounding farm fields and waterfowl impoundments draining to the lake, waterfowl feees and atmospheric deposition of nitrogen. The Refuge eurrently affeets the rate of water outflow from Lake Mattamuskeet to a very limited extent, through flap gates on each of the four eanals leading to Pamlico Sound. The one-way flap gates only open and allow water to pass when water levels in the lake are higher than those in Pamlico Sound. When the flap gates are open, winds ean accelerate the proeess of pushing lake water to Pamlico Sound, depending on direetion. The flap gates begin to close as Lake Mattamuskeet and Pamlico Sound reaeh the same level, and eompletely shut when the water level in the lake drops below that of the Sound, prevenling salt water from entering the lake.

Current models suggest that water levels are inereasing in the Pamlieo Sound at a ratc of 2 millimeters per year and that water levels in the Pamlico Sound have inereased 9 ineh̃es sinee the early 1900s. This is important beeause it eould impact the rate at whieh water leaves the lake, inereasing the amount of time that it takes exeess nutrients and sediments to be "flushed" from the system. Changes in water levels in the Pamlieo Sound may play an important role in eutrophication of Lake Mattamuskeet, since even a small rise in sea level direetly impaets the amount of time nutrients and sediments reside in the lake. As a result, climate change could inerease nutrients and sediments in Lake Mattamuskeet and inerease the likelihood that they are reeycled and resuspended in the water column by wind and wave aetion, and grazing fish like carp.

SAV is being used as the indicator for the health of Lake Mattamuskeet to guide eurrent and future monitoring and research efforts led by the USFWS and NCWRC. These efforts will provide the baseline information needed for managers to begin targeting potential strategies that can reduee harmful algae blooms and promote the growth of SAV in the lake, and to develop a long-term restoration plan to improve SAV eoverage and overall health of the lake.

Sinee September 2012, USFWS has partnered with the U.S. Geologieal Survey (USGS) and the N.C. Division of Water Resources (NCDWR) to monitor lake water quality. Data colleeted as part of this project has informed our eurrent understanding of why the grasses have deelined at Lake Mattamuskeet. The USFWS, in partnership with Dr. Ryan Emmanuel at North Carolina State University (NCSU) and the National Oceanie and Atmospherie Administration (NOAA), have begun monitoring local water levels, salinity and temperatures in the Pamlieo Sound from instruments placed at Bell Island Pier, located on Swanquarter National Wildlife Rcfuge. Real-time data from both the lake and the Pamlico Sound is publically available. Additionally, USFWS, NCWRC and NCSU are eollaborating to understand the abundanee and movements of earp and the eurrent impacts these fish have on the increased turbidity in Lake Mattamuskeet.

Several rcsearch projeets designed to inform restoration strategies for Lake Mattamuskeet began in the summer of 2016. With funding provided through the Wildlife and Sport Fish Restoration Program — exeise tax dollars on equipment, gear and motorboat fuel purchased by hunters, anglers and boaters — NCWRC has eontraeted with Dr. Mike Piehler of the University of North Carolina Institute of Marine Seienees and UNC Coastal Studies Institute to conduet a three-year projcct which will cxamine thc in-lake factors that may influenee the potential for restoration of grasses in the lake.

"This researeh is especially important sinee Lake Mattamuskeet has experieneed such a fast and dramatic deeline in plant coverage," Piehler said. "Two potential limitations on restoration of grasses in the lake are light availability and grazing [like waterfowl, turtles and earp]. We will map the amount of light available in the lake for SAV, conduet transplant experiments that inelude treatments that exclude grazers, and quantify

"SAV IS BEING USED AS THE INDICATOR FOR THE HEALTH OF LAKE MATTAMUSKEET TO GUIDE CURRENT AND FUTURE MONITORING AND RESEARCH EFFORTS LED BY THE USFWS AND NCWRC."

chemieal and physical differences between areas of the lake with and without plants . . . Results from this projeet will provide answers to questions about where in the lake should be targeted for restoration and what approaehes are most likely to lead to sustained restoration sueeess."

Dr. Randall Etheridge, East Carolina University, will begin to assess the sediment and nutrient inputs coming into the lake from various sourees. Dr. Daniel Obenour, NCSU, has begun a project that will use existing data for Lake Mattamuskeet to develop a lakc hydrologic and water-quality model.

Collectively, these projects have been prioritized as top research needs by the Mattamuskeet Teehnieal Working Group, and will help USFWS and NCWRC determine whieh restoration strategies may be most sueeessful. From what has been learned from similar restoration efforts, recovering the grass on Lakc Mattamuskeet will be eomplieated, and will also have to foeus beyond the bounds of the Refuge itself by including stakeholders in the surrounding watershed, many of whieh may have direet impacts on lake water quality. An assessment of all the factors impaeting SAV growth and survival needs to be complctcd first, so that any long-term restoration plans ean have the greatest ehanee of suceess.

Bottom line, the faetors whieh led to the eurrent state of Lake Mattamuskeet did not happen overnight. It's going to take time, and more importantly, continued funding and partnerships to improve the water quality and bring baek the grasses to Lake Mattamuskeet.

Doug Howell is the waterfowl biologist for the N.C. Wildlife Resources Commission and co-chair of the Mattamuskeet Technical Working Group. Dr. Michelle Moorman is a biologist for the U.S. Fish and Wildlife Service and co-chair of the Mattamuskeet Technical Working Group.

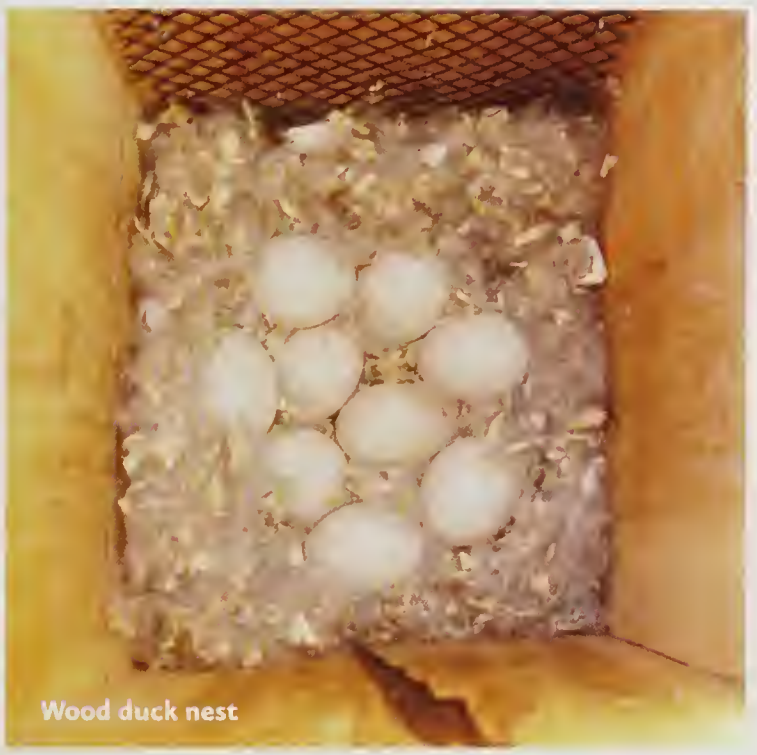
How to Build a **Nest Box**

Birds of Different Feathers Will Flock To These Houses

Written & Photographed by F. Eugene Hester

A wood duck fledgling exits the security of its nesting box and enters the world. The author has been building nesting boxes for more than 60 years.

Many birds nest or roost in tree cavities. Some mammals use them, too. Those birds and mammals will happily make a home out of a nest box of the correct dimensions placed in the correct habitat.



Wood duck nest

Birds of all shapes and sizes are attracted to nest boxes. Bluebirds, prothonatory warblers and Carolina chickadees use small boxes; wood ducks and screech owls prefer larger boxes; and barred owls require a large box. Directions on how to build, and where to place, nest boxes for each of those birds are included on the pages that follow.

I have been constructing and placing many types of prothonotary nest boxes made from plastic jars, sections of plastic PVC pipes and wood boxes for about 20 years. I have placed dozens of them in two millponds near my home just east of Raleigh and usually find more than 30 nests there each year.

I have been building wood duck nest boxes for more than 60 years while also observing those made by others. I now have 44 boxes on one millpond and 14 on another one. The present design included in this article is the best one yet. Wood ducks, hooded mergansers and even screech owls nest in them. The owls also roost in them and sometimes perch in the box entrance during the day.

Although I have twice found barred owl nests in hollow trees, this is the first time I have built a nest box for them. The construction is based on experiences of others, and it will be interesting to see whether owls, raccoons or squirrels will be the occupants.

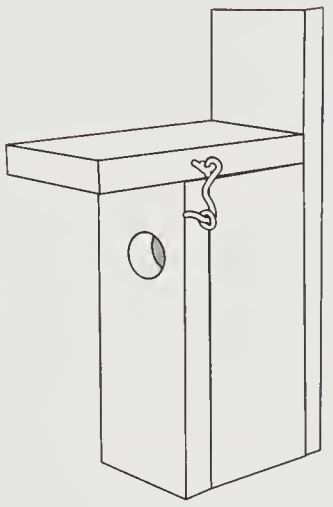
Most nest boxes are beneficial to birds by providing a more secure nesting site than natural cavities. An important note: It is best to locate these boxes in habitats already used by these birds.

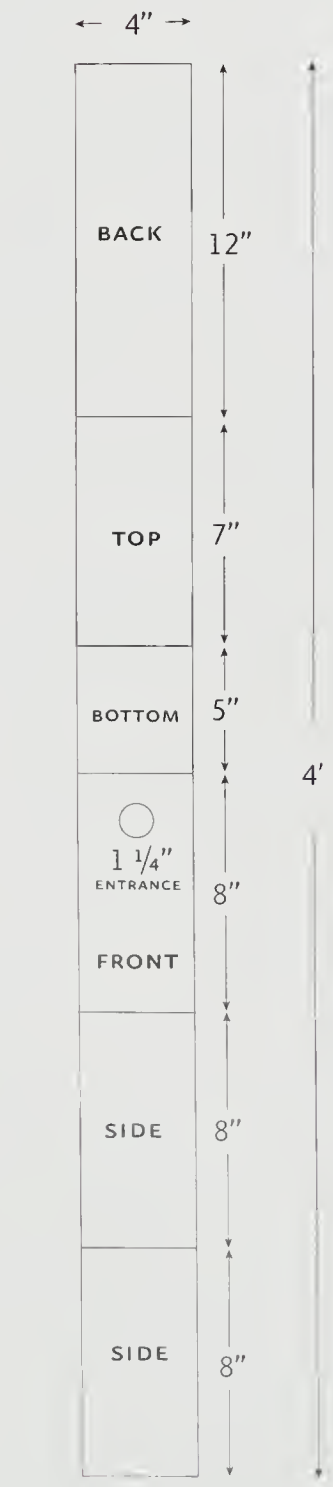
I hope you get as much pleasure and entertainment out of building these nest boxes and watching who moves in as I have over the years. Share any photographs and success stories with NCWRC on its Facebook page or by sending a letter to the editor at letters@ncwildlife.org. ⬘

F. Eugene Hester is a retired biologist who served as a professor at N.C. State and as a leader for the U.S. Fish and Wildlife Service.

PROTHONOTARY WARBLER NEST BOX

Prothonotary warblers are beautiful, golden-yellow birds with blue wings and tail, and are sometimes referred to as the golden swamp warbler. They spend our winters in Central and South America and migrate here each spring to nest in tree cavities. These warblers usually arrive in April and often use a nest box placed in the right swamp or small stream habitat. The boxes are simple, inexpensive and easy to make from boards readily available in building supply stores.





WHAT YOU NEED:

An 8-foot long board that is 1-inch thick and 4-inches wide can be used to make two nest boxes. Note that the dimensions of lumber bought in hardware stores are slightly smaller, but those are the boards to use. Additionally, you will need: measuring tape, pencil, saw, drill and bits, screwdriver (having two drills, one with a drill bit and one as a screwdriver, is helpful), and 1 ½-inch screws or nails. Nails can be used, but screws hold better and make future board replacement easier.

STEPS:

1. To get started, cut your board into the following lengths: 12 inches (back piece), 7 inches (top), 5 inches (bottom), 8 inches (front), and two 8-inch side pieces.

2. Drill a 1 ¼-inch entrance hole in the front piece 1 ½ inches from the top.

3. The front and back will be used to attach the sides. Start by drilling two ⅛-inch pilot holes for screws through the back and attach one side, keeping the bottom even with the bottom of the back board. Repeat this for the other side.

4. Drill ⅛-inch pilot holes for screws through the front board and attach it to the sides, again keeping the bottom edges even with the back and sides.

5. Fasten the bottom with screws through the edge of the bottom into the front, sides and back. Hinge the top to the back, using small screws. A screen door hook can be used to keep the top closed.

6. Drill a ⅜ inch hole in the back 1 ½ inches from the top for later attachment.

ALTERNATIVE METHOD

A slightly different method of construction is to hinge one side of the box instead of the top. This facilitates viewing the nesting activities by temporarily opening the door. Follow the same steps as described above, except that the side to be used for the door must be about ¼ inches shorter and ¼ inches narrower than the other side.

In this case, the top and bottom are secured to the back, front and the fixed side with screws, and a hinge is added to the door and screwed to the side of the back. A small nail placed ¾ inches inside the box will prevent the door from closing too far into the box. A screen door hook can prevent the door from opening.

Warblers will use other nest boxes, made from plastic jars 4 inches in diameter, plastic pipes and regular bluebird boxes.

PLACING THE BOX

Placing your nesting box in the right habitat is essential. Prothonotary warblers migrate to North Carolina each spring for nesting, and live in swamps, ponds and along slow-moving streams. They are more abundant in the eastern part of North Carolina. On the edge of a swamp, pond or slow moving stream, drive a treated 8-foot long, 2-by-2-inch wood post into the ground. Drill a ⅜-inch hole about 4 feet above the ground or water. Use a ¼-inch bolt 2 ½-inches long to attach the box to the post.

Note: This box is also ideal for chickadees, and you might want to build a second one for them and place it near your house.

WOOD DUCK/SCREECH OWL NEST BOX

Rough cypress or cedar boards are the best material to use for building wood duck and screech owl boxes, but these boards are sometimes expensive and difficult to find. Spruce or pine boards from building supply stores can also be used, but they are not as durable as cypress or cedar.

Screech owls find the wood duck boxes suitable for their roosting and nesting, so the plans can be used for either species. Additionally, if the box is not used for the intended species, moving it to a different habitat can provide a home for the other one.

WHAT YOU NEED:

A nest box can be made from a board 1-inch deep, 10-inches wide and 10-feet long. (Note: Spruce or pine boards bought at building-supply stores are smooth and their thickness and width are slightly less, but they can be used.)

Additionally, you will need a measuring tape, pencil, saw, a 10-inch strip of hardware cloth, drill and bits, screwdriver (two drills, one with a drill bit and one as a screwdriver, is helpful), and 2-inch deck screws or nails. Nails can be used, but screws hold better and make future board replacements easier.

STEPS:

1. To get started, cut the board into the following pieces: 24-inch back piece, 19-inch front, 14-inch top, and two sloping sides 21-by-19 inches long. One side of the box will serve as a door, so it should be cut 6 inches from the bottom at a 45-degree angle sloping so the door section overlaps the angled bottom piece to prevent water from entering the box. The bottom 6-inch piece of that side should be secured with screws. The bottom will be about 8-by-9 ½ inches, but might vary depending on whether rough cut or smooth boards are used. Make measurements and cuts after other parts of the box are assembled.

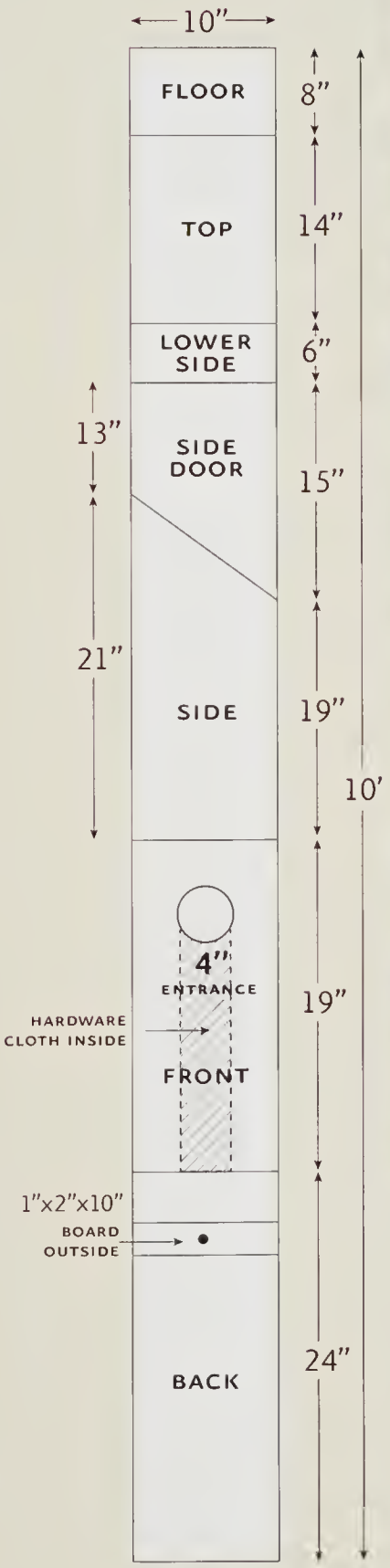
2. In the front, cut a round 4-inch entrance or an elliptical entrance 4 inches wide and 3 inches high. The entrance should be about 2 inches from the top of the box. Using screws or nails, add a strip of ¼-inch piece of hardware cloth about 4 inches wide and 10 inches long inside the front from just below the entrance to near the bottom. This will serve as a ladder to assist the ducklings in climbing out of the nest.

3. Drilling pilot holes for the screws is helpful. Using 2-inch deck screws through the edges of the back, attach the long sides so the tops of all three boards are even. Add screws through the edges of the front and attach it to the sides, so the top of the front is even with the top edges of the two sides. Note that since one side will function as a door, use caution to assure that on both the front and back, the upper screw is 18 inches from the bottom on that side.

4. Secure the top with screws to the front, back and fixed side, but not to the side that will be used as a door.

5. The bottom board should be about 8-by-9 ½ inches, but may vary depending on whether rough cut or smooth boards are used. Make measurements after other parts of the box are assembled and cut this board last after the sides are in place. Add several ¼-inch drain holes. Recess the bottom board at least ½-inch up into the walls to minimize water seeping into the box floor.

6. Add a 1-by-2-by-10-inch board to the back of the box opposite of the entrance hole of the board and box. Drill a ½-inch hole through the center for later use of a bolt to attach the box to a post. This board serves to hold the box slightly away from the post and slightly forward to assist the ducklings in climbing from the box.



BOX PLACEMENT

Wood ducks live in swamps, beaver ponds and small rivers, so it is important to place the box in or near these

WOOD DUCK/SCREECH OWL NEST BOX

areas. When the ducklings are only 1 day old, the mother calls them from the nest and they climb out and walk behind her to a brood-rearing area of thick aquatic vegetation. Although they can climb, jump, run, swim, dive and feed themselves, a long journey exposes them to predators and other hazards.

The box should be erected in time for the nesting season that can start as early as February. Dig a 3-foot deep hole with a post-hole digger or auger in the soil and place a 10-foot long, 4-by-4-inch treated post. For best results, place it in the water a few feet from shore and away from trees. A ½-inch hole is drilled near the top of the post so that a ⅜-inch bolt 7 inches long can be placed through the box and post.

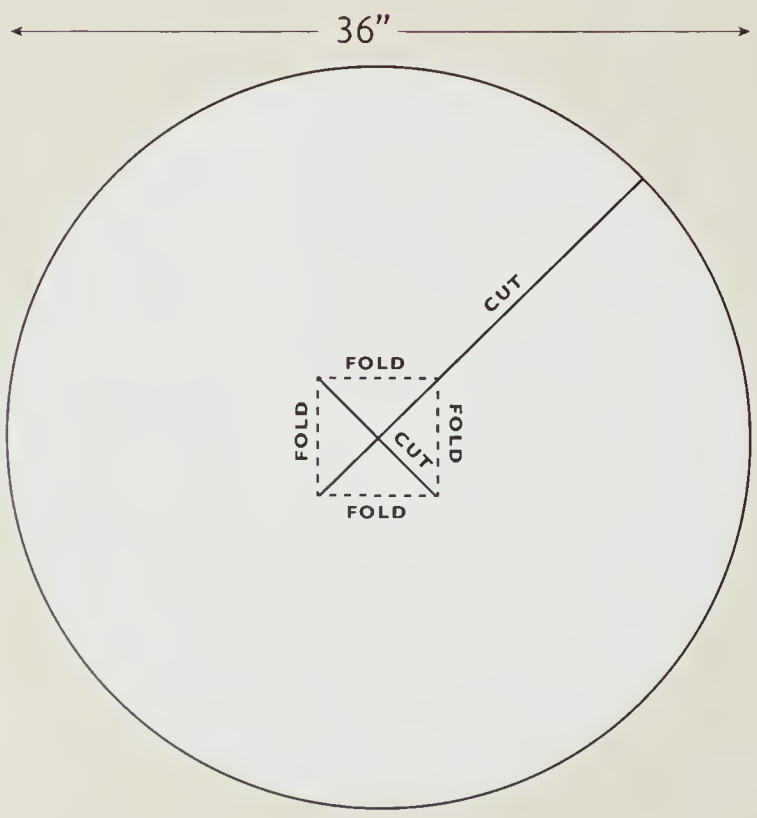
It is important to add 5 inches of wood shavings to the box for the hen to use for her nest. In North Carolina and other southern states, many hens will nest twice in one season. Remove the old nest and egg shells each winter and add new shavings.

Other birds and wasps may use the box. If the box is intended for a screech owl, place it at the edge of woods overlooking an open area.

ADD A GUARD

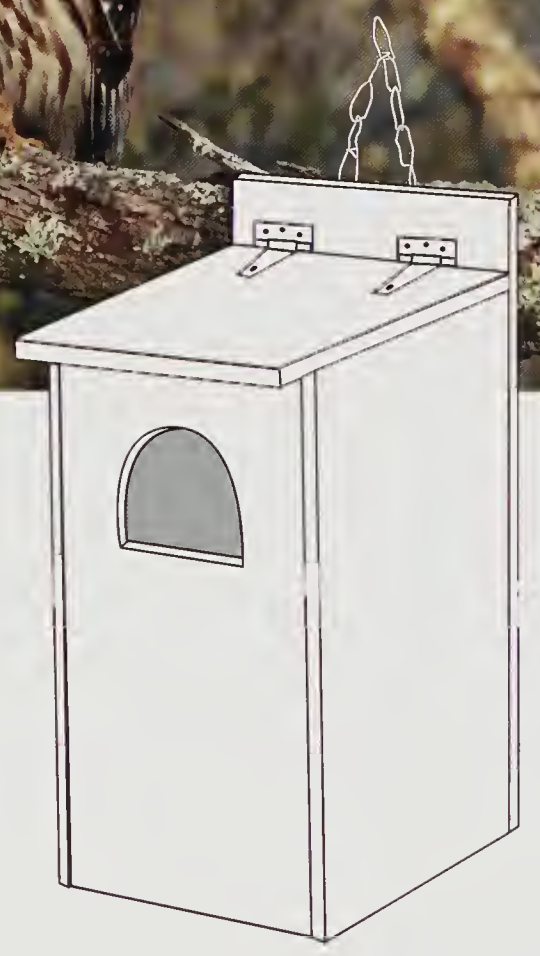
A conical predator guard is used below the box to prevent raccoons and black rat snakes from reaching the nest. (Note: They can be difficult to make and it might be easier to locate ready-made guards by contacting local Ducks Unlimited members who know where completed guards can be obtained.) The guard can be made by cutting a 36-inch circle from a sheet of 26-gauge galvanized sheet tin.

From the center, make four cuts 4-inches long and bend them upward to fit tightly around the post below the nest box. Make a cut from one edge to the center and slightly overlap the sides of the cut to form a cone. Fasten these edges with sheet metal screws. The predator guard should be in place on the post before the box is added.



BARRED OWL NEST BOX

Great horned owls usually build their nests in trees on platforms, such as old hawk nests from a previous year, rather than in boxes or tree cavities. Barred owls live in woodlands, especially in swamps or lowlands near lakes or streams. Their calls — "Who cooks for you, who cooks for you-all"— can be heard in late afternoon or at night and will help you determine their presence.



WHAT YOU NEED:

To build a nest box, you will need a 4-by-5-foot sheet of ¾-inch thick exterior grade untreated plywood, measuring tape, pencil, saw, drill and bits, two hinges with ¾-inch screws, screwdriver, two drills (one with a drill bit and one as a screwdriver is helpful), and 2-inch deck screws or nails. Nails can be used, but screws hold better and make future board replacement easier.

STEPS:

1. To get started, cut the board into the following pieces: 30-by-13-inch back, 13-by-24-inch front, two sides (each 13 inches wide with sloping sides of 27 and 24 inches), 15-by-17-inch top and 13-by-11 ½-inch floor.

2. Cut an entrance 7 inches wide and 7 inches tall near the top of the front board. Attach two 7-by-½-inch horizontal strips of wood inside, below the entrance to help the young owls climb from the box.

3. Drill ⅛-inch pilot holes for screws in the front and back boards, and attach them to the two sides with the bottoms of all four sides even.

4. Recess the bottom board about 1 ½ inches into the box and add 9-by-12-inch strips underneath each side to provide additional support. Drill several ¼-inch holes on the bottom for drainage.

5. Add two hinges to the top with screws and attach the hinges to the back.

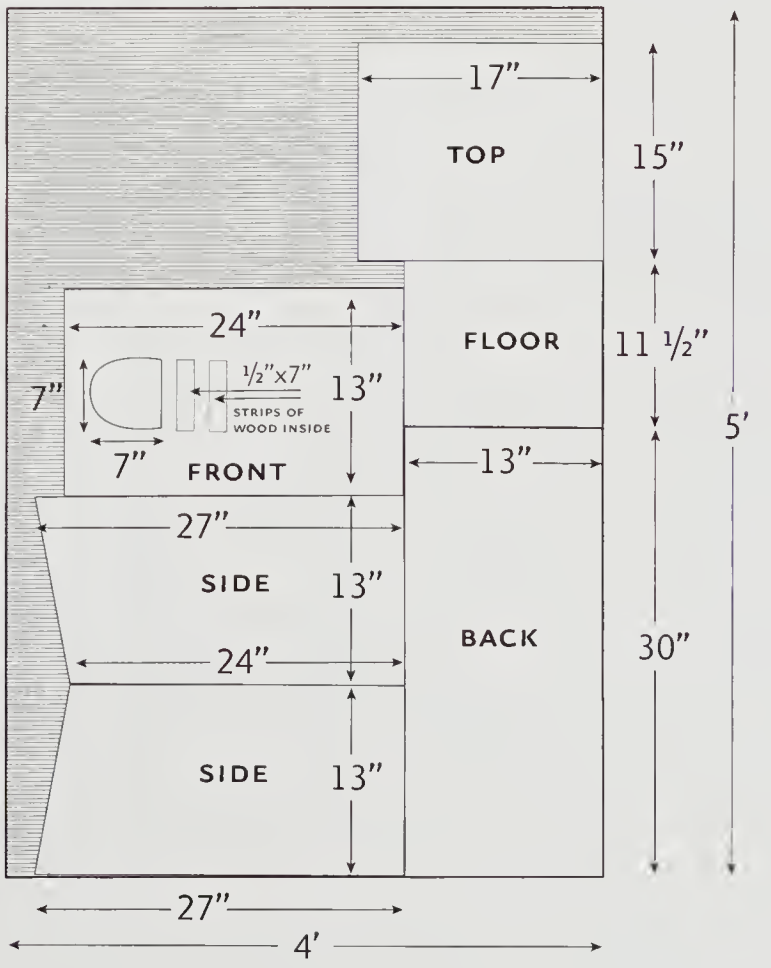
6. The box is both large and heavy and needs to be attached high in a tree. To help make that easier, add a chain about 20 inches long to the back of the box by drilling two ⅜-inch holes in the back several inches below the top. Add two ¼-inch bolts 2 inches long with washers through the back and ends of the chain.

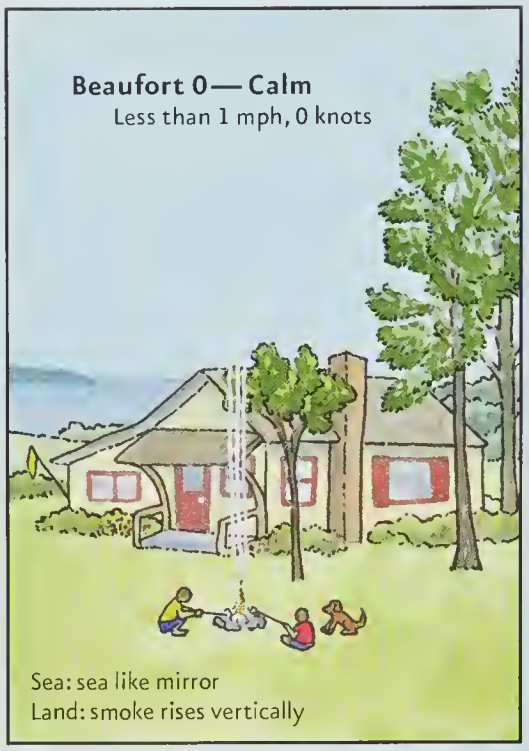
7. Since owls do not carry nesting material, 5 inches of wood shavings must be added to the box.

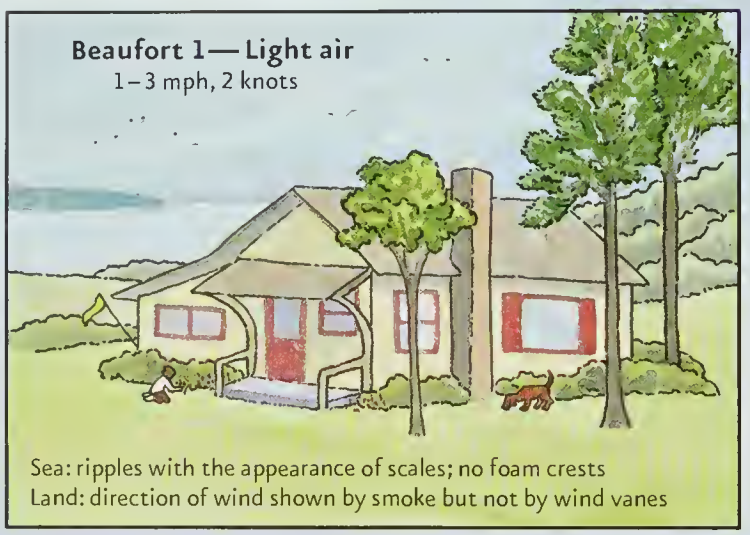
BOX PLACEMENT

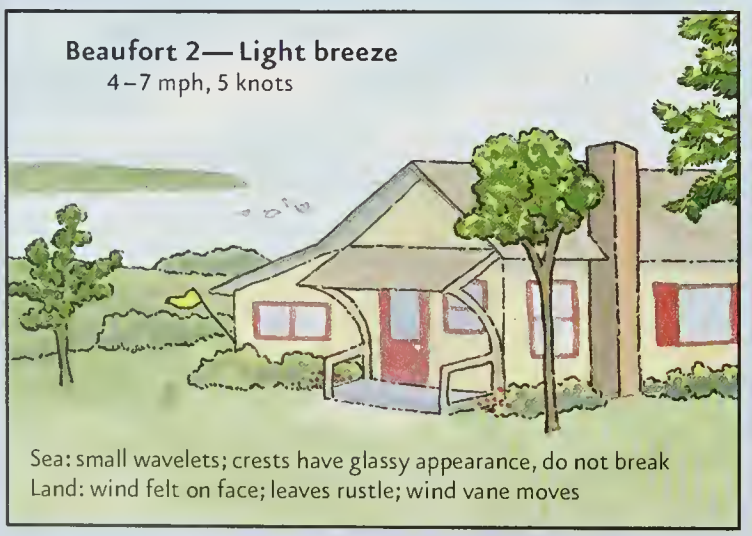
Owls start nesting early, so the box should be erected in January or earlier. Two or more people may be needed to erect the box. For best results, place it in a heavily wooded area of mature trees near a stream or in a swamp. Use a ladder to climb at least 15 feet high in a large tree. Insert a very large nail or lag bolt pointed downward several inches above the intended top of the box. With a rope tied to the chain on the box, hoist the box by the rope over a higher limb and place the chain over the nail.

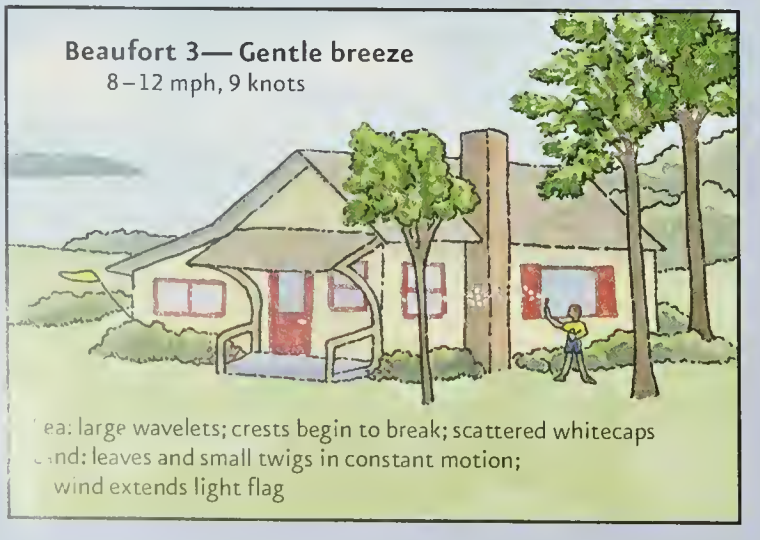
Other animals, especially raccoons and gray squirrels, may use the box. So it may be necessary to examine the box each year to remove old squirrel nests.






Beaufort 1— Light air
1–3 mph, 2 knots
Sea: ripples with the appearance of scales; no foam crests
Land: direction of wind shown by smoke but not by wind vanes


Beaufort 2— Light breeze
4–7 mph, 5 knots
Sea: small wavelets; crests have glassy appearance, do not break
Land: wind felt on face; leaves rustle; wind vane moves


Beaufort 3— Gentle breeze
8–12 mph, 9 knots
ea: large wavelets; crests begin to break; scattered whitecaps
nd: leaves and small twigs in constant motion;
wind extends light flag

Have you ever stopped to think about how to measure something as important as the movement of air? After all, how can we measure something we can't see or touch?

BEAUFORT'S WONDERFUL WIND SCALE

written and illustrated by Consie Powell
nature activity by Anne M. Runyon

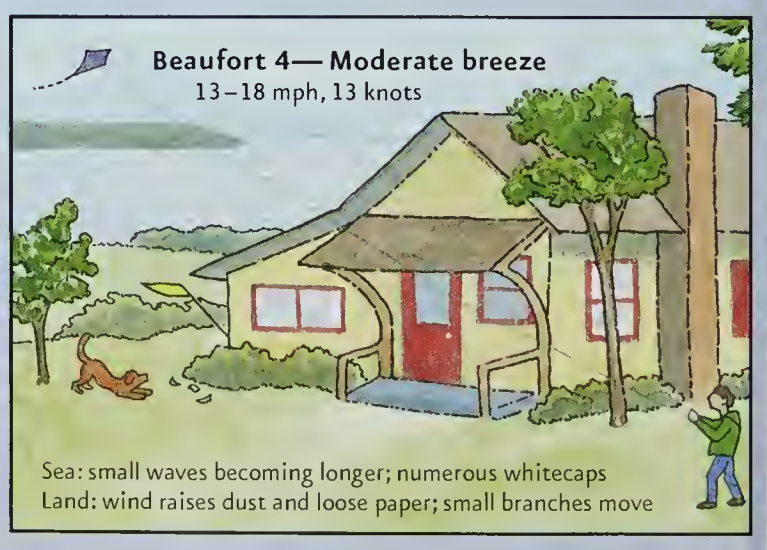
A storm is forecast. We watch The Weather Channel, or listen to a broadcast on the radio, and we trust that they know what they're talking about. Winds in excess of 25, or even 35 miles per hour, are predicted. But just what does that mean?

FORECASTING

Weather forecasters use all kinds of interesting instruments—some purely mechanical, and others electronic—to gather data about the state of the atmosphere (both high up and down close, where we live). Projections are then made comparing the new data to the forecaster's scientific knowledge of various atmospheric conditions and processes. Today's forecasting relies on rapid sharing of information around the country and the world. But before the invention of the electric telegraph in 1835, weather information had to travel literally by land or by sea. That was often slower than a storm might move.

A NEED FOR STANDARDIZATION

Imagine that you are a ship's captain, before the invention of the telegraph, going on a voyage that follows a route that has been traveled many times before. Certain conditions—stormy skies, rough seas, pouring rain—can be expected because previous captains have noted them in their log books. But just what does "very rough seas" mean? What a relatively inexperienced captain might consider "very rough" could well be called "moderately rough" by an old-timer. Such possible inconsistencies were problematic. A standardization of terms was needed. And this leads us to the Beaufort scale.

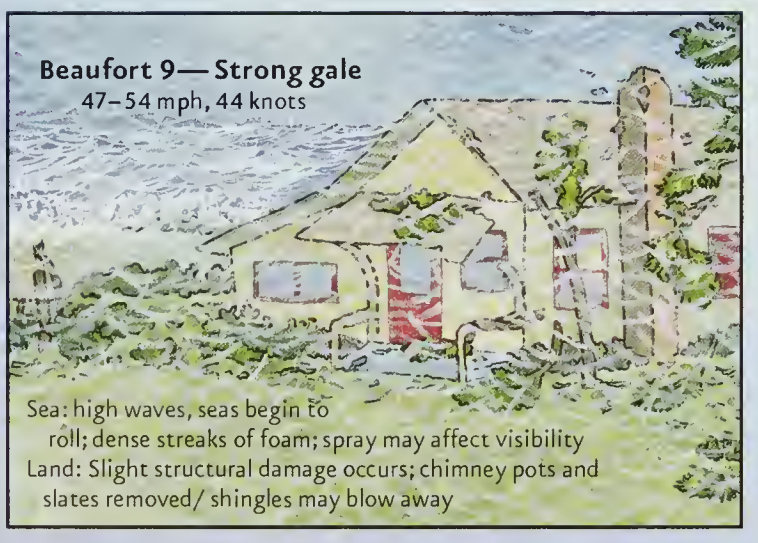

Beaufort 4— Moderate breeze
13–18 mph, 13 knots
Sea: small waves becoming longer; numerous whitecaps
Land: wind raises dust and loose paper; small branches move

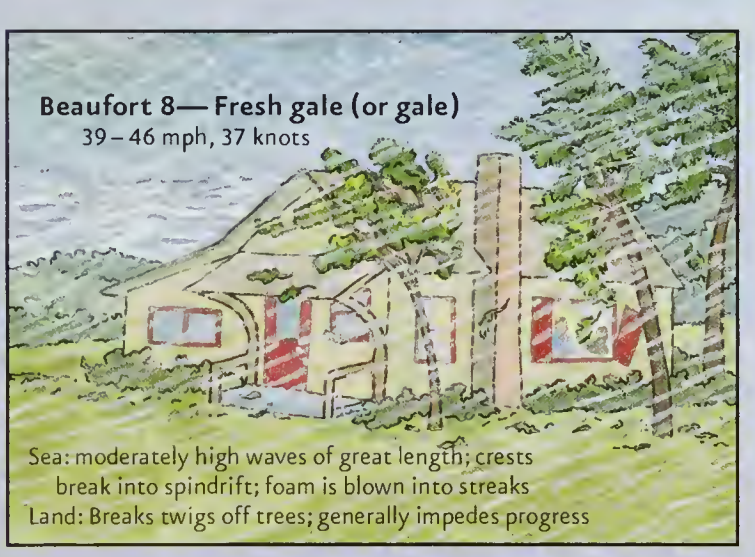
BEAUFORT AND HIS SCALE

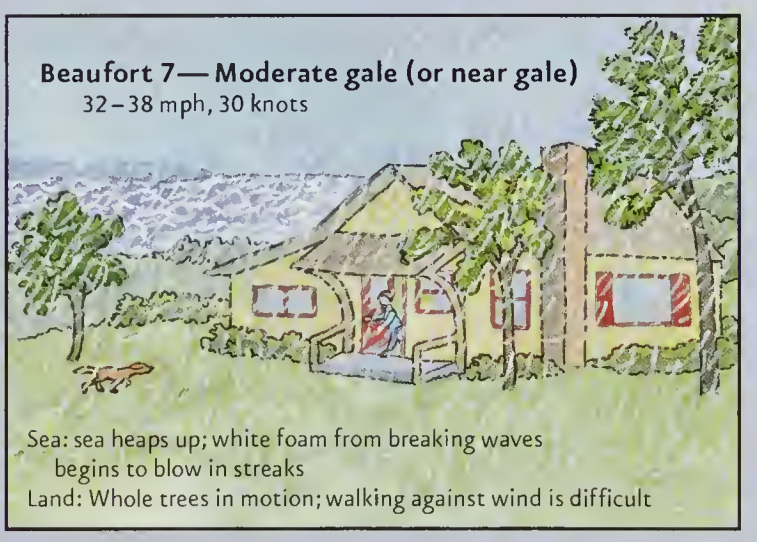
Francis Beaufort was born in Ireland in 1774 and grew up the mapmaking son of a mapmaker. During this time when the world ran on wind, Beaufort went to sea and traveled extensively. His curiosity was endless, and he kept careful records of winds and weather conditions and constantly took notes about anything and everything. He worked tirelessly to improve the accuracy of charts (nautical maps) for sea voyages. He took soundings (measurements of sea depth), he made astronomical measurements to determine longitude and latitude, and he measured shorelines. The charts he created were more accurate and more useful than previous charts.

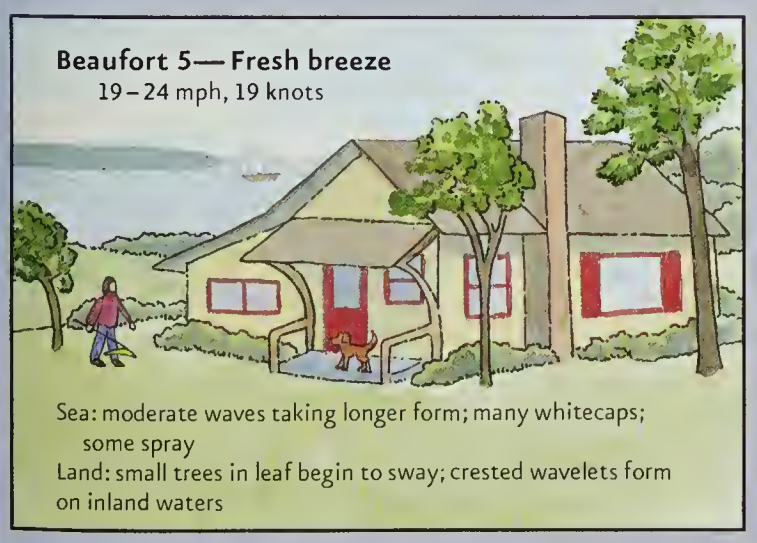
Using notes and observations, Beaufort developed a numerical wind scale that became a reliable way to collect data and is still in use today. It ranges from 0 (calm) to 12 (hurricane). Beaufort, however, wasn't the first person to take note of wind conditions and determine a scale to quantify them. In the mid 1700s, an engineer named John Smeaton made wind measurements and experiments to determine the most efficient speed and position for the blades of windmills. Alexander Dalrymple was the English East India Company's first official hydrographer who strove to determine the most efficient routes and conditions for travel. In poring over ships' logs, Dalrymple found the terms that sailors used for wind to be vague and inconsistent. A consistent and easily useable scale for wind force was needed. Dalrymple adapted Smeaton's wind scale in his unpublished book "Practical Navigation." However, it was Francis Beaufort who made a wind scale that truly became a working tool.

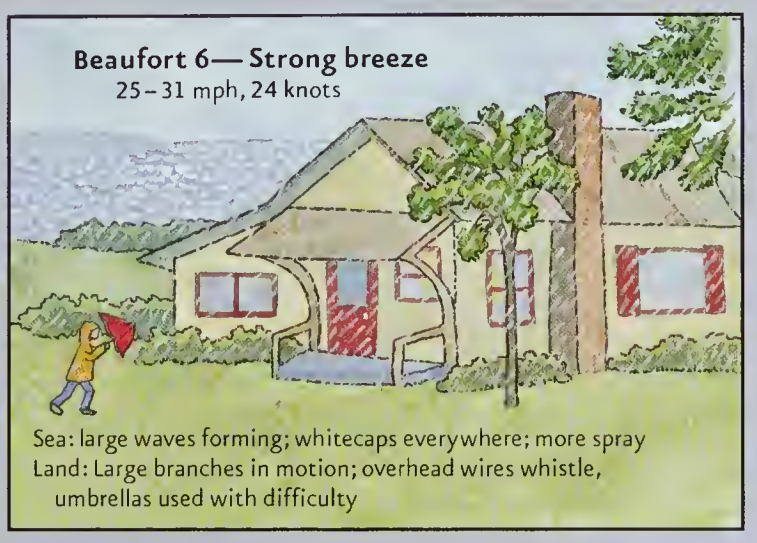
The Beaufort scale may seem simple. After all, it's just a tight collection of descriptive words. Those words describe something invisible, yet they give substance to the wind by describing what the wind is doing to everything it touches.


Beaufort 9— Strong gale
47–54 mph, 44 knots
Sea: high waves, seas begin to roll; dense streaks of foam; spray may affect visibility
Land: Slight structural damage occurs; chimney pots and slates removed/ shingles may blow away


Beaufort 8— Fresh gale (or gale)
39–46 mph, 37 knots
Sea: moderately high waves of great length; crests break into spindrift; foam is blown into streaks
Land: Breaks twigs off trees; generally impedes progress


Beaufort 7— Moderate gale (or near gale)
32–38 mph, 30 knots
Sea: sea heaps up; white foam from breaking waves begins to blow in streaks
Land: Whole trees in motion; walking against wind is difficult

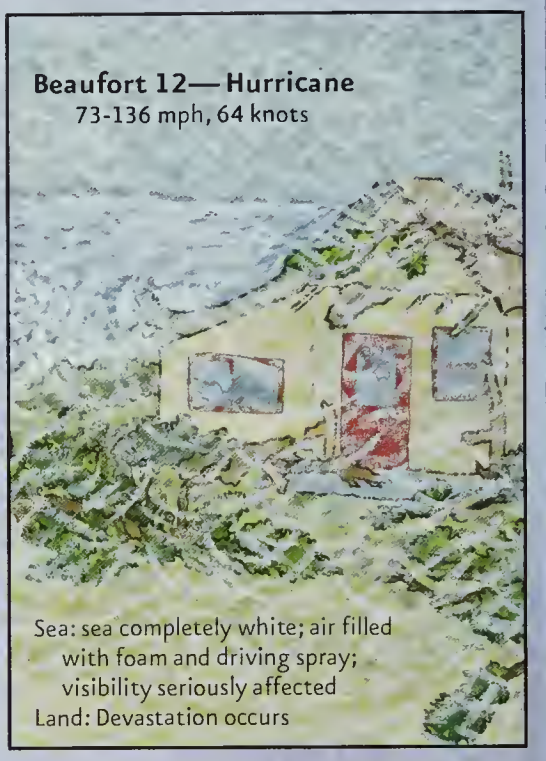

Beaufort 5— Fresh breeze
19–24 mph, 19 knots
Sea: moderate waves taking longer form; many whitecaps; some spray
Land: small trees in leaf begin to sway; crested wavelets form on inland waters

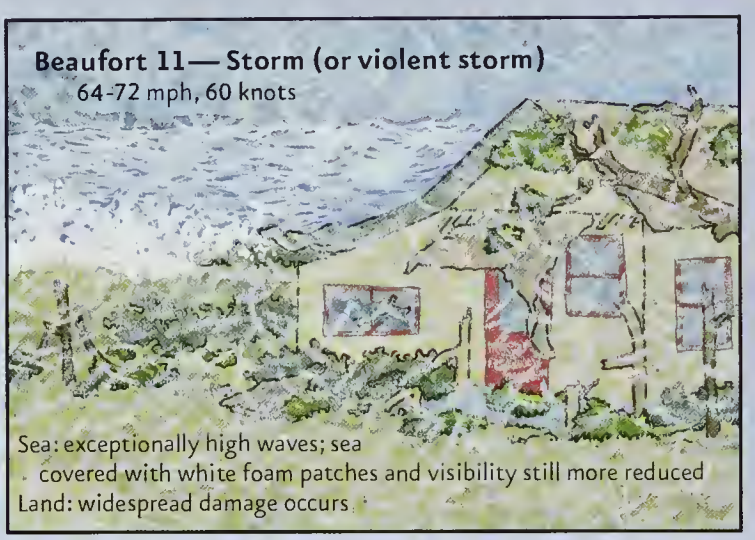

Beaufort 6— Strong breeze
25–31 mph, 24 knots
Sea: large waves forming; whitecaps everywhere; more spray
Land: Large branches in motion; overhead wires whistle, umbrellas used with difficulty

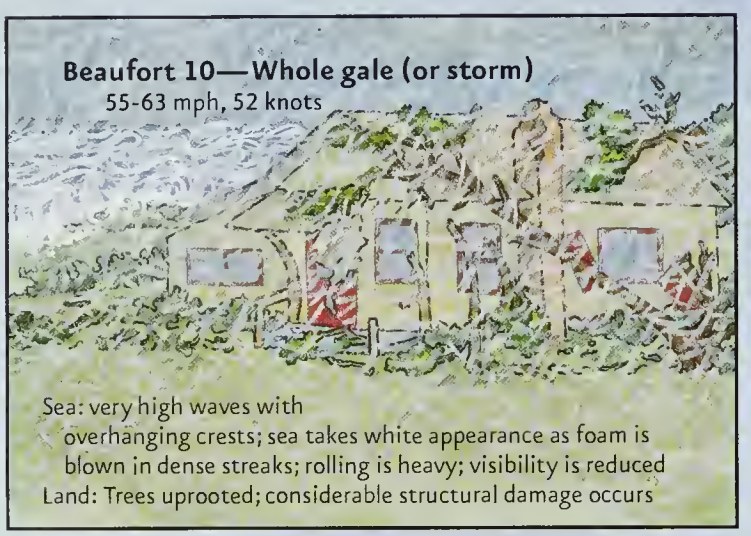
Even before sailing ships maintained wind records they did have records of their sail changes. Those changes correspond to specific conditions, and by using the Beaufort scale, those sail changes can now be used to determine specific wind speeds. This gives us historical data that helps climatologists today.

OBSERVING AND RECORDING

Why should we still care about the very low-tech Beaufort scale? In this day of gadgets, gizmos and electronic tools that demand electricity to run, there's something to be said for simply paying attention to the world around us. By watching the shimmy of leaves on a tree overhead, feeling the wind buffeting us from behind, or listening to the flappety-flap of the post office flag, we are using the best and most dependable tools ever: our own body and mind. By taking notes, we can tuck away information, even if we aren't exactly certain what we'll do with it. Most importantly, the very act of observing and recording is one of the best ways to learn about the world around us. Francis Beaufort has given us, in his wonderful wind force scale, a perfect example of how to do that.


Beaufort 12— Hurricane
73-136 mph, 64 knots
Sea: sea completely white; air filled with foam and driving spray; visibility seriously affected
Land: Devastation occurs


Beaufort 11— Storm (or violent storm)
64-72 mph, 60 knots
Sea: exceptionally high waves; sea covered with white foam patches and visibility still more reduced
Land: widespread damage occurs


Beaufort 10— Whole gale (or storm)
55-63 mph, 52 knots
Sea: very high waves with overhanging crests; sea takes white appearance as foam is blown in dense streaks; rolling is heavy; visibility is reduced
Land: Trees uprooted; considerable structural damage occurs

The state-of-sea version of the Beaufort scale is still used by ships without anemometers (a device for measuring wind speed), to file reports to national and international weather agencies.

The words you read in these boxes are, with only very minor changes, the Beaufort Scale (land version) as described in Webster's Ninth New Collegiate Dictionary *and the* Peterson State-of-Sea *version.*

Get Outside

Every day has measurable wind force, so try using the Beaufort scale to keep track of what's happening where you live. If you live by the ocean or a lake, you'll be able to use water conditions to determine wind force. If you live inland, take note of trees, grasses, flags and smoke to assign a Beaufort number to your day's weather. Keep track of these conditions; do you see any patterns? On an "ordinary" day, are there changes from morning to evening? How high a Beaufort number can you assign when storms come through?

Try creating your own scale. Keep track of natural events that happen under different conditions. Keep a dedicated notebook in which you take note of things you see happening around you — things that aren't listed in the Beaufort scale — like whether spider webs have dew on them, or vibrate, or are ripped ragged by moving branches. Then see if any of your observations are consistent with certain wind forces from day to day. You might want to check a weather station or website to get a wind speed reading; once you have made note of that, simply put that information away and pay attention to what's happening around you. After a week or two of this kind of observation, you'll have some actual data that you can use to ask some questions, and maybe formulate some answers. That's how science works.

Read and Find Out

- "Close to the Wind: The Beaufort Scale" by Peter Malone, G. P. Putnam's Sons, 2007
- "Defining the Wind: The Beaufort Scale, and How a 19th-Century Admiral Turned Science into Poetry" by Scott Huler, Three Rivers Press, 2004
- "The Rising of the Wind: Adventures Along the Beaufort Scale" by Jacques Yvart and Claire Forgeot, The Green Tiger Press, 1983

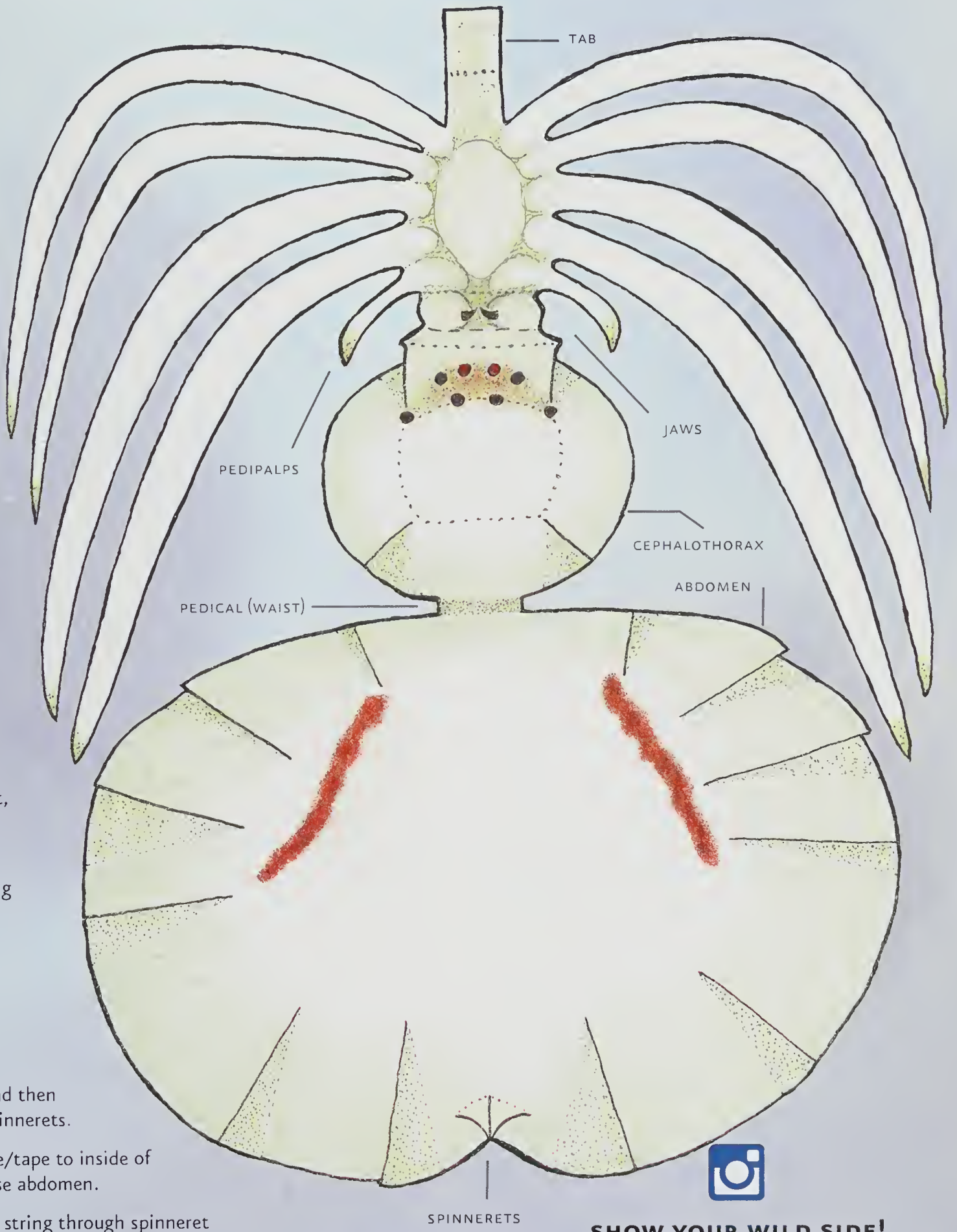
On the Internet

- A visual "cartoon" of the 12 levels of the Beaufort scale: howtoons.com/?page_id=150/
- Understanding the Wind Forecast Symbols (contemporary usage): gslmarina.com/WindForecastSymbols/tabid/127/Default.aspx
- Beaufort Wind Force Scale: specifications and equivalent speeds at sea, as well as photos of conditions at each level: http://mrcirl.org/whale/Beaufort.pdf

Find out more about Project WILD Workshops and literature at the Wildlife Commission's website at ncwildlife.org.

Ballooning Crab Spider Paper Sculpture

A silken egg sac hidden under a goldenrod leaf wiggles. Crab spiderlings chew their way out of the sac. One after another, these tiny spiders climb high up the flower to stand on tip-toe, facing into the warm light breeze — Beaufort wind force number 2. Each spiderling releases long silken strands from its spinnerets and floats away, ballooning into a new home. If the wind increases to a Beaufort wind force number 3, it is too strong. The spiderlings will cling to the flower and wait for another light breeze.



COPY ONTO STURDY PAPER
CUT OUT THE SPIDER

1) Cut out 6 legs. Next cut out the round abdomen. Then cut out the pedical (waist) and the cephalothorax. Finally cut out the remaining 2 legs and 2 pedipalps.

2) Cut 15 slits into the abdomen, following black lines.

3) Cut 4 slits into the cephalothorax, following black lines.

SCULPT THE CEPHALOTHORAX

4) Overlap and glue/tape all 4 slits shut, covering gray. (Glue down and add tape to backside.)

5) Pinch down along · · · lines, sculpting boxy shape.

6) Accordion fold face, down along · · · lines and up along - - - lines.

SCULPT THE ABDOMEN

7) Fold up spinnerets.

8) Overlap and glue/tape all 12 slits, and then overlap and glue/tape together below spinnerets.

9) Lay tab over pedical (waist) and glue/tape to inside of abdomen. Pinch at pedical (waist) to raise abdomen.

10) Thread several strands of thin white string through spinneret hole and tape to inside of abdomen. Your spider is ready to balloon.

White with red markings, a crab spider can change to yellow to match a yellow flower. It can also lose the yellow, turning white again.

SHOW YOUR WILD SIDE!
Post images of you and your spiders on Instagram with hashtag *#WildNotebookActivity*

Retired Ecologist Hall, A Leader in Moth and Grasshopper Conservation, Wins Distinguished 'Quay' Award

The N.C. Wildlife Resources Commission presented the Thomas L. Quay Wildlife Diversity Award to Dr. Stephen Hall, a distinguished ecologist, invertebrate zoologist and dedicated conservationist.

Commission Executive Director Gordon Myers presented Hall with the award, along with a painting by renowned wildlife artist Duane Raver, during the Commission's business meeting in Raleigh on Aug. 25.

The Commission presents the prestigious Thomas L. Quay Wildlife Diversity Award annually to individuals who make outstanding contributions to wildlife diversity in North Carolina and who are considered leaders in wildlife resources conservation.

MELISSA McGAW/NCWRC

Dr. Stephen Hall, center, receives the Thomas L. Quay Wildlife Diversity Award at the Commission's business meeting in August. Pictured with Hall are Wildlife Commission Chairman John Litton Clark, left, and Executive Director Gordon Myers.

Hall, a resident of Chapel Hill, retired from the N.C. Natural Heritage Program as a landscape ecologist. He dedicated his 25-year career to conservation of invertebrate wildlife, particularly moths, butterflies and grasshoppers. A self-described champion of moth and grasshopper conservation, Hall is well known for his work with the federally endangered Saint Francis satyr, a butterfly found only in Cumberland and Hoke counties, and the rare Venus Flytrap moth. Hall's work has provided essential information to the conservation of these two species.

Hall has participated in the field investigation for and publication of eight county and regional natural area inventories, as well as nine distributional studies of moths, butterflies and grasshoppers in North Carolina. In 2010 and 2011, he conducted an extensive inventory in the Uwharrie Mountains, collecting 6,328 records for 849 species. His vast amount of work has helped the Natural Heritage Program track invertebrate species better, which has given biologists a new perspective on conservation planning and action.

Hall also developed and applied a methodology for assessing landscape integrity and terrestrial habitat quality. This methodology is now incorporated by land-use and transportation planners, as well others, across the state in their conservation-planning efforts.

After his retirement in 2014, Hall continued working with invertebrates and currently is developing a "Moths of North Carolina" website, which will house an atlas and distributional data on nearly 3,000 species.

"I'd like to thank the Commission for establishing this award—the highest honor that people working in environment and conservation can achieve here in North Carolina," Hall said when accepting the award. "Even though we don't necessarily expect any kind of acclaim, it's always nice to get some encouragement in doing something that other people find worthwhile."

Hall also acknowledged past Thomas L. Quay award winners, who have dedicated their careers emulating Dr. Quay.

"The quote about Thomas Quay being a full-time volunteer and unpaid activist applies to all of us," Hall said. "I'm very glad to be joining this group of very distinguished previous award winners."

Hall is the 11th person to receive the honor. The first recipient was Dr. Quay, a former professor of zoology at N.C. State University.

eNEWSLETTER
Get N.C. Wildlife Update—news including season dates, bag limits, legislative updates and more—delivered to your Inbox from the N.C. Wildlife Resources Commission. Sign up at ncwildlife.org/enews.

North Carolina Teams Stay On Target

Two youth teams affiliated with the N.C. Wildlife Resources Commission captured second and third place in the senior division at the 31st annual National Youth Hunter Education Challenge (YHEC). The shooting and outdoors skills competition was held July 24–29 at the Mill Cove Environmental Center at Mansfield University in Mansfield, Pa.

Yadkin County's Forbush High School's Red Team, coached by Chris Poplin, won second place in the senior division. Stanly County's Gray Stone Day School, coached by Eric Efird, took third place honors.

"It's amazing to see North Carolina teams in the top of the standings year after year," said Tim Lemon, the state shooting sports coordinator for the Commission. "It's a real testament to how much preparation and practice is put in by the students and the coaches. All of their hard work is reflected in the scores."

Teams from across the country competed in marksmanship with .22 rifles and black-powder rifles at knock-down targets, shotgun on a sporting clays course, and archery at 3-D game targets. Non-shooting events included orienteering, wildlife identification, hunter responsibility exam and a hunter safety trail test.

Nearly 650 competitors, coaches and parents attended the event, which was sponsored by the National Rifle Association. Since its inception in 1985, YHEC has reached more than 1 million young men and women.

In North Carolina, teams and individuals qualified for YHEC through the Wildlife Commission's district and state Youth Hunter Education Tournaments, a component of the Hunter Education Program. Teams are organized on senior (high school) and junior (middle and elementary schools) division levels.

Project Healing Waters Honors Pechmann Center Director

TOM CARPENTER/NCWRC

Tom Carpenter

Tom Carpenter cut his fishing teeth on the lakes of his home state of Kentucky. Now the director of the John E. Pechmann Fishing Education Center in Fayetteville, Carpenter spends more time behind his desk planning programs and classes than he does on a boat.

As an Army veteran, Carpenter is particularly close to Project Healing Waters, an outfit committed to the physical and emotional rehabilitation of disabled active military service personnel and disabled veterans through fly-fishing and associated activities including education and outings.

In June, Project Healing Waters presented Carpenter with their Phil Johnson Exceptional Leadership Award for his "dedicated and inspiring service to the disabled servicemen and women of the Fayetteville/Fort Bragg Chapter and North Carolina Operation."

"The award is truly a recognition of the team that has come together to support me and the program, as we all strive to fulfill the Project Healing Waters Fly Fishing mission to aid injured service members and disabled veterans in their physical and emotional recovery," Carpenter said. "The most amazing thing to watch in a PHWFF program is when we have taught a veteran a fly-casting skill, fly-tying, or rod-building technique, they quickly turn to help someone else. I am greatly appreciative of all of the support and assistance that has come from the staff of the National Headquarters, Regional Coordinator Ryan Harmon, and the volunteers of the Fayetteville/Fort Bragg program and I look forward to our continued success."

Young Anglers Win Licenses

MELISSA McGAW/NCWRC

Brooks Grady, 7, of Grifton, accepts his lifetime unified sportsman license certificate from Wildlife Commission Chairman John Litton Clark (left) and license donor Russell Rhodes, from Neuse Sport Shop in Kinston.

While Grifton angler Brooks Grady may have caught only one tiny sunfish at the Neuseway Nature Park kids' fishing event on June 11, he reeled in something much bigger at the N.C. Wildlife Resources Commission's business meeting in July—a lifetime Unified Youth Sportsman License.

The license, valued at $450 and donated by Neuse Sport Shop of Kinston, was the grand prize in a random, statewide drawing for participants in 40 kids' Fish for Fun events, held in May and June in celebration of National Fishing and Boating Week 2016.

Wildlife Commission Chairman John Litton Clark presented the lifetime license certificate to Brooks during the Commission's meeting in Raleigh. Brooks, who is 7, was accompanied by his parents Lynnette and Alan Grady, his grandmother Rosie Dudley, and other family members. Brooks' license will provide him fishing and hunting privileges in North Carolina for free for life—even if he moves out of state. These privileges include fishing in all public waters — from the mountains to the coast — as well as hunting for big game, hunting on game lands and waterfowl hunting.

Aden Parnell, 8, of Mt. Gilead, won the first prize—a lifetime Comprehensive Inland fishing license donated by the N.C. Council of Trout Unlimited and valued at $250. Aden's license gives him fishing privileges in all public inland waters in North Carolina, including designated mountain trout waters, trout waters on game lands and joint waters. He participated in the Fish for Fun event at King's Mountain Point on June 11.

CALENDAR OF EVENTS

Friday–Saturday, Dec. 2–3

Billed as "the Southeast's largest fly-fishing event," the 8th Annual WNC Fly Fishing Expo returns to the WNC Agricultural Center. This two-day fly-fishing extravaganza provides anglers a forum to sharpen their skills and learn about the latest innovations in their sport. The expo will feature over 70 booths of local fly shops. Angling Orvis, Scientific Anglers, Flymen Fishing and Sage will showcase the latest gear. Hours will be noon to 7 p.m. on Dec. 2, and 9 a.m. to 4 p.m. on Dec.3. Tickets are $15 at the door for adults, and free for children 16 and under. Go to wncflyfishingexpo.com for details.

Saturday–Sunday, Dec. 3–4

Harkers Island comes to life the first full weekend in December each year as the Core Sound Decoy Guild holds its annual Core Sound Decoy Festival. The first festival was held in 1988 and it has become an annual pilgrimage for many. The festival has many attractions, including antique decoy exhibits and retriever demonstrations. Competitions include duck calling, loon calling and duck head whittling. For more information, visit decoyguild.com/decoyfestival.

Readers should check with the contact listed before traveling to an event. Items for listing should be conservation- oriented and should be submitted at least four months in advance to mike.zlotnicki@ncwildlife.org, or call 919-707-0175.

LIFETIME LICENSES

Help conserve wildlife for future generations. In 1981, hunters, anglers and wildlife enthusiasts became shareholders in an innovative investment and conservation program called the North Carolina Wildlife Endowment Fund.

Today, the Commission has 19 different lifetime licenses in five categories: Infant, Youth, Adult, Senior and Disabled.

The endowment fund for wildlife was a simple yet revolutionary idea: Create a lifetime inland fishing or hunting license. Put the license fees into a special fund. Spend the accrued interest, not the principal, on programs and projects that benefit fish and wildlife. To learn more or to purchase a lifetime license visit ncwildlife.org/licensing or call 1-888-248-6834.

Duck Survey Remains Steady

KEN TAYLOR/NCWRC

North America's spring duck population remains high, but returning birds initially found a lower pond count in key areas of the breeding grounds, according to the 2016 Waterfowl Breeding Population and Habitat Survey.

The annual survey, which been conducted jointly by Delta Waterfowl, the U.S. Fish and Wildlife Service and Canadian Wildlife Service since 1955, puts the breeding duck population at 48.36 million slightly lower than last year's record population of 49.52 million, but still 38 percent above the long-term average.

The 2016 survey marks the highest estimates ever recorded for mallards and green-winged teal. Mallards increased 1 percent to 11.79 million, 51 percent above the long-term average. Green-winged teal populations grew by 5 percent to 4.28 million, which is more than twice the long-term average.

The news was not as good for pintails, which dropped for a fifth-straight year. Pintail numbers declined by 14 percent to 2.62 million, which puts the species 34 percent below the long-term average. Blue-winged teal numbers fell 22 percent to 6.69 million, but remain 34 percent above the long-term average.

Wigeon continued a strong trend, increasing 12 percent to 3.41 million. Wigeon numbers are now 31 percent above the long-term average. Shovelers declined by 10 percent, but still check in at 3.97 million, a strong 56 percent above the long-term average.

Among diving ducks, scaup increased 14 percent to 4.99 million, which places them right at the long-term average. Canvasbacks declined by 3 percent to 736,000, but remain 26 percent above the long-term average. Redheads, which have remained near record breeding numbers for the past five years, jumped 8 percent to 1.29 million.

Lower pond counts and drier conditions will likely result in average duck production, which means fewer juvenile ducks in the fall flight. Young ducks are generally easier to decoy and make up a significant portion of the hunter harvest.

January 2017 Public Hearings Schedule

PROPOSED CHANGES IN WILDLIFE, FISHERIES, GAME LAND MANAGEMENT AND ENFORCEMENT RULES.
All hearing times are 7 p.m.

DATE	DISTRICT	CITY	LOCATION
Jan. 10, 2017	4	Dublin	Bladen Community College
Jan. 11, 2017	5	Graham	Southern Alamance High School
Jan. 12, 2017	6	Norwood	South Stanly High School
Jan. 17, 2017	9	Clyde	Haywood Community College
Jan. 18, 2017	8	Morganton	Western Piedmont Community College
Jan. 19, 2017	7	Elkin	Elkin High School
Jan. 24, 2017	1	Edenton	Swain Auditorium
Jan. 25, 2017	2	New Bern	Craven Community College
Jan. 26, 2017	3	Rocky Mount	Nash Community College

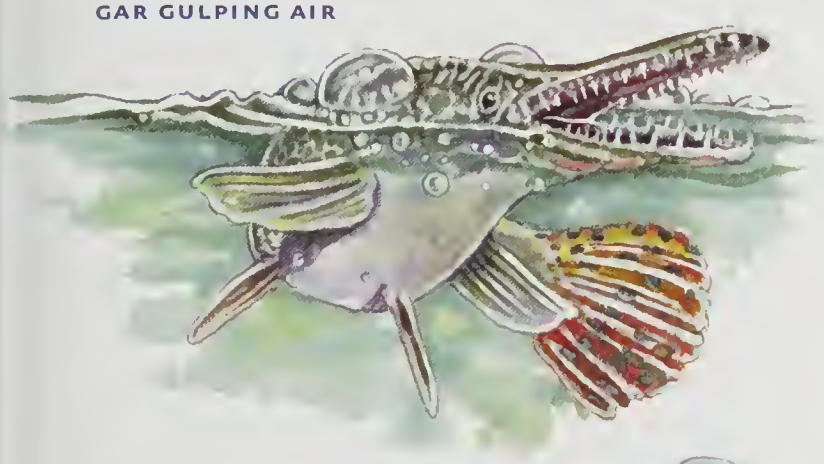
Why Does Water Temperature Affect Fish So Much?

written by Clyde Sorenson
illustrated by Jim Brown

ANGLERS ARE VERY AWARE THAT WATER TEMPERATURE HAS A HUGE IMPACT ON FISH and their willingness to bite. Most fish are poikilotherms — their bodies are essentially the same as that of the water they inhabit, and cold water can often simply "slow the bite" because it "slows the fish." But water temperature interacts with two important characteristics of water to basically dictate where various fish species can and can't live.

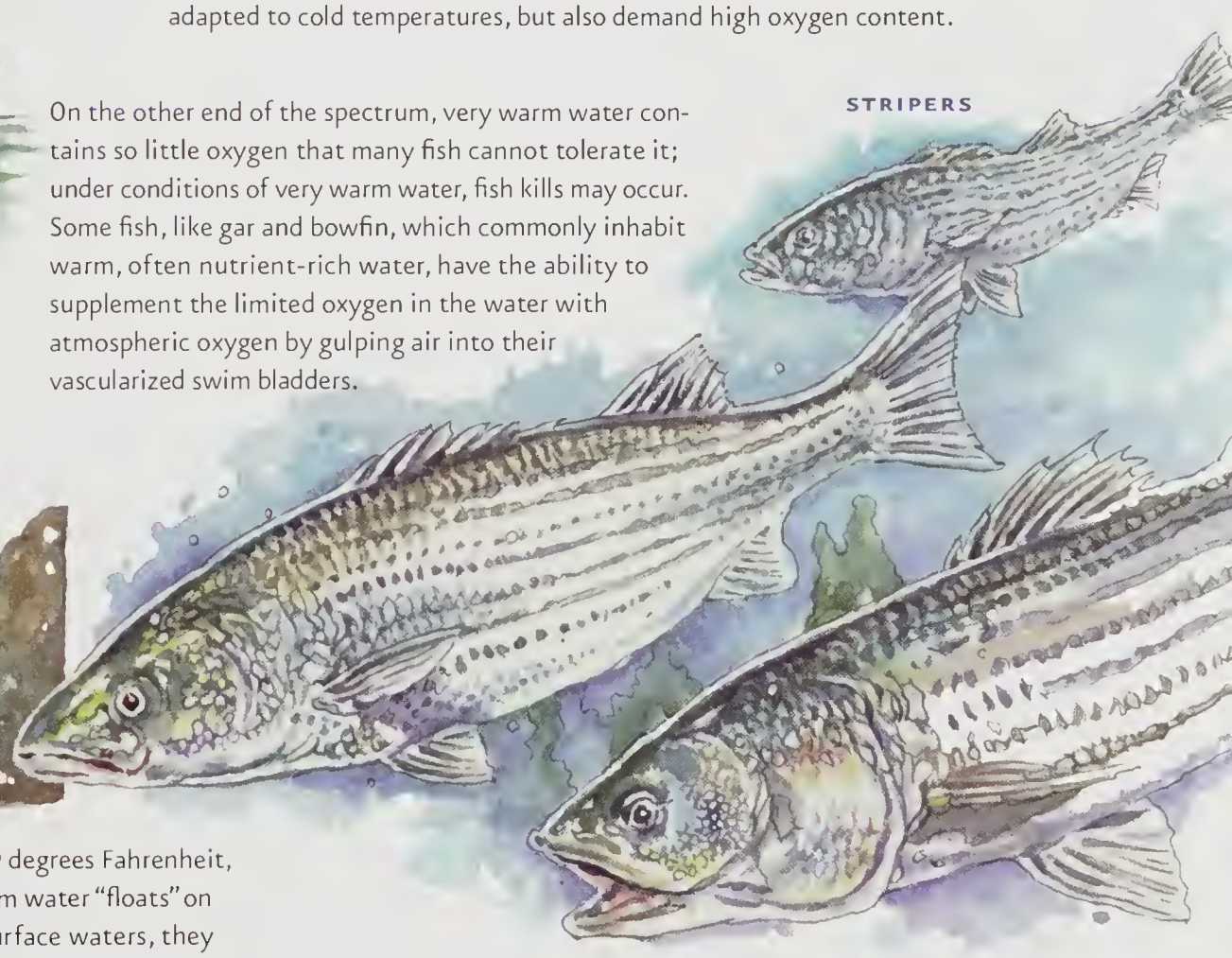
The first of these is that cold water holds more oxygen, all other things being equal, than warm water. So, paradoxically, there is more oxygen available in the water to support metabolic activity when water is cold, while cold temperatures slow metabolic activity. Trout and other "coldwater" species have metabolisms adapted to cold temperatures, but also demand high oxygen content.

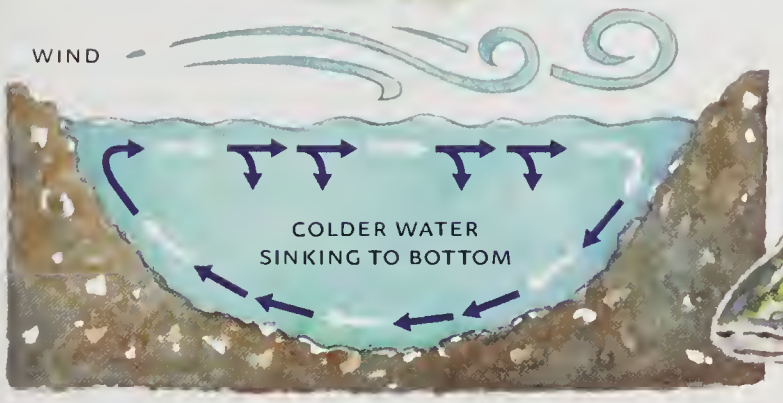
GAR GULPING AIR



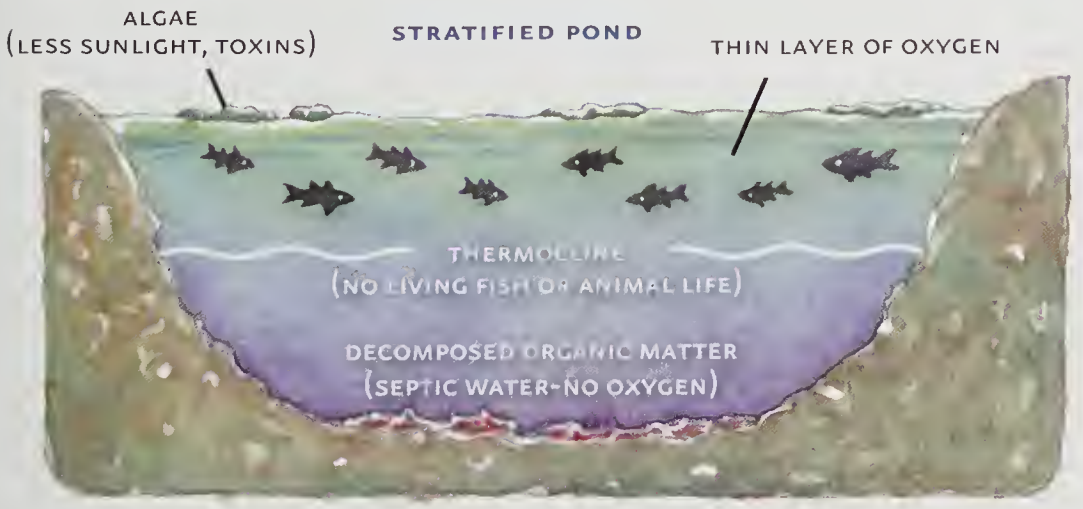
On the other end of the spectrum, very warm water contains so little oxygen that many fish cannot tolerate it; under conditions of very warm water, fish kills may occur. Some fish, like gar and bowfin, which commonly inhabit warm, often nutrient-rich water, have the ability to supplement the limited oxygen in the water with atmospheric oxygen by gulping air into their vascularized swim bladders.

STRIPERS





The second factor is that fresh water is densest at about 39 degrees Fahrenheit, so that cold water sinks relative to warmer water, and warm water "floats" on cold water. In the fall, as cooling air temperatures chill surface waters, they sink, mixing the water column from top to bottom. This period of turnover redistributes nutrients — and oxygen — throughout the water column.



During the summer, in many bodies of water, the surface layers are heated by the sun and oxygenated by wind — up to a point. The lower levels of colder, denser water aren't oxygenated because of limited mixing, and over the summer, the oxygen levels can decline to very low levels through the decomposition of organic matter in the water and on the bottom. The transition from the warm surface waters to the cold, deeper waters occurs in a thin layer called the thermocline. Such a stratified water body can place fish in a real predicament in very hot weather — the surface layers can become too warm and oxygen-depleted to sustain life, but the cold, oxygen-poor layers offer no refuge. The currents found in rivers and the ocean can have huge impacts on all of these relationships.

Dirty Birds

written by Jim Dean

Thunderstorms rolled across Emerald Isle almost every afternoon when I spent a week there with my family this past August. But sometimes the storms would pass through, and the strong on-shore winds and pounding waves would abate, replaced for an hour or so by lighter, variable breezes and a much calmer surf.

It wasn't safe to be on the beach during the storms, so I usually sat in the garage under the cottage to wait for better fishing conditions. One afternoon, I happened to notice two mourning doves and an Eastern flycatcher sitting on the power lines.

ILLUSRTATION BY JACK PITTMAN

"As soon as that downpour reaches us, they'll head for shelter," I mumbled to myself. Not so. The rain arrived in drenching sheets, but the three birds stayed put. And they didn't hunker down. The flycatcher began to flutter its wings and tail just as it would in a birdbath, apparently relishing the chance to cool off and clean up.

"If regular bathing is vital for birds, then providing a birdbath and keeping it full of fresh water year-round could be an important service."

The two doves displayed an even stranger reaction (to me at least). They would each raise one wing high overhead and lean as far as they could to completely expose that side while bracing themselves against the opposite folded wing. When that underside was thoroughly soaked, they would repeat the process by rolling to the other side and extending the other wing. All three birds continued bathing for at least 30 minutes, seemingly delighted to have the opportunity. Then, they settled down, unconcerned by the storm.

I have been a birdwatcher much of my life, but I have never witnessed the dove's extended wing tactic, and wondered if it was commonly known (after all, we aren't likely to be watching birds during thunderstorms).

So what do ornithologists say about how birds bathe and why? I described the incident to an ornithologist buddy, and checked out websites to learn what experts might know about the bathing habits of birds. The ornithologist had not personally seen the wing-raising activity, but he and the websites agreed that the bathing habits of birds were not fully understood, noting that there had also been relatively few studies of the subject.

All agreed, however, that bathing likely serves multiple needs, including cooling in hot weather and aiding in the control of mites and other irksome parasites. It was also noted that some species—wrens and house sparrows are examples—also frequently follow a water bath with a dust bath that is believed to somehow further aid in the control of parasites. That might seem ironic to humans—like taking a morning shower and then wallowing in dirt. Even so, many creatures—hogs, other livestock and some wild animals—roll in mud to provide a protective coating against biting insects, and water and dust baths clearly serve beneficial purposes for birds.

Certainly, wet birds have no problem flying from a birdbath, seemingly unhampered by damp or sodden feathers. At least one study involving starlings suggests that perhaps the greatest benefit birds gain from bathing may be enhanced maintenance of feathers and improved agility in flight.

In that experiment, some of the starlings were denied the ability to bathe. Their feathers became increasingly bedraggled and the birds displayed a reduction in flight agility. Indeed, those unbathed birds also demonstrated greater reluctance to fly when they felt threatened. In other words, they seemed to know that they were impaired and less likely to escape from a predator.

Birds replace feathers once or twice each year, and bathing apparently not only helps them keep feathers in the best possible condition, but also assists in reconditioning or discarding damaged or worn out feathers. Those starlings that had been denied opportunities to bathe showed great eagerness to do so when they were again given a chance.

If bathing is essential for feather maintenance, this may also help explain why birds bathe regularly, even in winter when enjoying a cool dip might not be a priority. One expert noted that when he finds a winter skim of ice in his birdbath, he will sometimes add warm water from a tea kettle to melt the ice, and is frequently rewarded with a "pool party."

Another interesting observation made by several experts is that while most birds are notoriously territorial, they seem to observe a truce at bath time when even different species patiently wait their turn.

Feeding our feathered friends is a popular pastime, though some experts suggest that it is not really necessary, especially during the warm months (and may even create unhealthy dependence or attract more predators). Those caveats aside, if regular bathing is vital for birds, then providing a birdbath and keeping it full of fresh water year-round could be an important service.

Oddly, the birdbath I installed this summer when I got back from the beach has been largely ignored. Perhaps my birds have other familiar bathing spots they prefer (there are birdbaths nearby, and a shady creek, too). But I'm also wondering if they might appreciate a handy bar of "dove" soap.

MELISSA McGAW/NCWRC

Oyster gathering

OUTDOOR MOMENT

IN THE JANUARY • FEBRUARY ISSUE

NEIL JERNIGAN

READERS GET THE PICTURE

After receiving more than 1,500 entries from *WINC* subscribers, we unveil the winners of our 12th annual photo competition. More than 30 photographs have been selected as the best of the best in 10 categories.

WILD AND TASTY

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